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Maine Division of Boiler Inspections

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STATE OF MAINE
DEPARTMENT OF LABOR AND INDUSTRY
DIVISION OF BOILER INSPECTIONS

BOILER RULES and REGULATIONS

Formulated by the

Board of Boiler Rules

ENFORCED BY INSPECTORS
FROM
THE DIVISION OF BOILER INSPECTIONS

STATE HOUSE
AUGUSTA

1964 Edition

NOV 2 5 1968

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STATE OF MAINE

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Augusta, Maine

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CHIEF INSPECTOR OF BOILERS

RALPH L. LANGILLE
Department of Labor and Industry
Augusta, Maine

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MEMORANDUM TO BOILER OWNERS AND USERS:

No boiler equipped to carry over 15 pounds steam pressure nor any steam heating boilers, hot water heating boilers or hot water supply boilers located in a public or private schoolhouse or owned by a Municipality may be operated without a Certificate of Inspection, except boilers exempt under Sec. 78, Ch. 30, R.S. 1954 amended by Sec. 6, Ch. 272, P.L. 1957.

Certificates of Inspection are obtained from the Department and are granted only after the boiler is inspected by a state boiler inspector or by an authorized inspector employed by an insurance company which insures the boiler against explosion and the report covering said inspection is filed with the Department.

Certificates of inspection must be posted under glass in the boiler room of all stationary boilers. In cases of portable boilers the certificate of inspection may be posted on the inside of the cab, or kept in a metal container which is attached to the boiler or the conveyance thereof or is kept in the tool box thereon.

No welding of a boiler or its attachments may be made without first receiving authorization and instruction from the Department or the insurance carrier and then only by a welder certified as provided in Sec. 84, Ch. 30, R.S. 1954.

Before purchasing a used steam boiler, the prospective purchaser should contact the Chief Inspector or an authorized inspector to determine if such boiler will meet the requirements of the boiler rules and regulations of this State.

In case of boiler explosion or other serious damage to a boiler, inform the Department and/or the insurance company immediately. Do not remove or change position of parts unless necessary for the protection to life and limb until the State or authorized inspector has made his investigation.

Address all communications to the Division of Boiler Inspections, Department of Labor and Industry, Augusta, Maine. Always refer to the State boiler number whenever referring matters to the Department.

BOILER LAW

CHAPTER 30, SEC. 64-88 INCLU., R. S. 1954 AMENDED BY CHAPTER 404, P. L. 1955, CHAPTER 272, P. L. 1957 AND CHAPTERS 124 AND 414, P. L. 1963

Boilers and Unfired Steam Pressure Vessels

Sec. 64. Board of Boiler Rules. The board of appeals, as heretofore established, shall be known as the "Board of Boiler Rules," and shall consist of 5 members, 4 of whom shall be appointed by the commissioner, with the approval of the Governor and Council. At the expiration of their respective terms of office their successors shall be appointed for terms of 4 years each. In the event of a vacancy by reason of the death or resignation of any of said 4 appointed members, or otherwise, the commissioner shall fill such vacancy for the remainder of the term with a representative of the same class. Of these said 4 appointed members, one shall be a representative of the owners and users of steam boilers within this State, one a representative of the boiler manufacturers within this State, one a representative of the operating steam engineers in this State and one a representative of a boiler inspection and insurance company licensed to do business within the State. The 5th member shall be the Commissioner of Labor and Industry, who shall be chairman of the board. The board shall meet at least twice yearly at the State Capitol or other place designated by the board.

Sec. 65. Expenses of members. The 4 appointed members of the Board of Boiler Rules shall serve without salary, and shall receive their actual expenses not to exceed their actual traveling expenses and hotel bills, and not to exceed 20 days in any year while in the performance of their duties as members of the board, to be paid in the same manner as in the case of other state officers. The chairman of the said board shall countersign all vouchers for expenditures under the provisions of this section.

Sec. 66. Definitions. 1955, c. 404, § 1. 1963, c. 124, § 2. As used in sections 64 to 79, the following words shall have the following meanings:

"Approved" shall mean approved by the department.

"Code" shall mean the power boiler code of the American Society of Mechanical Engineers.

"Deputy inspector" or "authorized inspector" shall mean a person holding a certificate of authority to inspect boilers within this State.

"Miniature boiler" shall mean a boiler as defined by the American Society of Mechanical Engineers' Code.

The term "schoolhouse" as used in this chapter shall include, but shall not be limited to, any structure used by schools or colleges, public or private, for the purpose of housing classrooms, gymnasiums, auditoriums or dormitories.

Sec. 67. Rules and regulations. The board shall formulate rules for the safe and proper construction, installation, repair, use and operation of steam boilers in this State. The rules so formulated shall conform as nearly as practicable to the Boiler Code of the American Society of Mechanical Engineers and amendments and interpretations thereto made and approved by the council of the society.

Rules formulated by the board shall become effective 90 days after the date they are adopted. Any change in the rules which would raise the standards governing the methods of construction of new steam boilers or the quality of material used in them shall not become effective until 6 months after the date of adoption of such change in the rules; provided, however, that before any rules or regulations are adopted, a public hearing shall be held, suitable notification to be published in at least 3 newspapers throughout the State.

Sec. 68. Chief and deputy inspectors. 1957, c. 272, § 1; c. 397, § 25. 1963, c. 124, § 2. The commissioner shall appoint, with the approval of the Governor and Council, and may remove for cause when so appointed, a citizen of this State who shall have had, at the time of such appointment, not less than 5 years' practical experience with steam boilers as a steam engineer, mechanical engineer, boiler maker or boiler inspector, and who has passed the same kind of an examination as that prescribed for deputy and authorized inspectors in section 71 to be Chief Inspector of Boilers at any time the office may become vacant.

The commissioner may likewise appoint such deputy inspectors as are necessary to carry out the provisions of sections 64 to 84 from among applicants who have successfully passed the examination provided for in section 71.

Sec. 69. Powers of chief inspector. The chief inspector is empowered:

I. Free access to premises. To have free access for himself and his deputy or deputies during reasonable hours, to any premises in the

State where a steam boiler is built or where a steam boiler or power plant apparatus is being installed or operated, for the purpose of ascertaining whether such boiler is built, installed and operated in accordance with the provisions of sections 64 to 79.

II. Inspection certificates. To issue, suspend and revoke inspection certificates allowing steam boilers to be operated, as provided in sections 64 to 79.

III. Enforce laws and rules. To enforce the laws of the State governing the use of steam boilers and to enforce the rules of the Board of Boiler Rules.

IV. Records. To keep a complete record of the type, dimensions, age, conditions, pressure allowed upon, location and date of last inspection of all boilers to which sections 64 to 79 apply.

V. Copies of rules. To publish and distribute among boiler manufacturers and others requesting them, copies of the rules adopted by the board.

VI. Examinations and certificates of competency. To hold examinations and issue certificates of competency to inspectors who have successfully passed such examinations.

Sec. 70. Authorized inspectors; duties. 1963, c. 124, § 1. In addition to any deputy boiler inspectors authorized and appointed under section 68, the commissioner shall, upon the request of any company authorized to insure against loss from explosion of steam boilers in this State, issue to the boiler inspectors of such company certificates of authority as authorized inspectors, provided that each inspector before receiving his certificate of authority shall pass satisfactorily the examination provided for in section 71, or, in lieu of such examination, shall hold a certificate as an inspector of steam boilers for a state that has a standard of examination equal to that of this State, or a certificate from the National Board of Boiler and Pressure Vessel Inspectors. Such authorized inspectors shall receive no salary from, nor shall any of their expenses be paid by the State, and the continuance of an authorized inspector's certificate shall be conditioned upon his continuing in the employ of a boiler inspection and insurance company duly authorized and upon his maintenance of the standards imposed by sections 64 to 84. Such authorized inspectors shall inspect all steam boilers insured by their respective companies, and the owners or users of such insured boilers shall be exempt from the payment of the fees provided for in section 76. Each company employing such authorized

inspectors shall within 30 days following each annual internal inspection made by such inspectors, file a report of such inspection with the chief inspector.

Sec. 71. Deputy and authorized inspectors to be examined. 1957, c. 272, § 2. 1963, c. 124, § 2. The examination for deputy inspectors and authorized inspectors shall be given by the Chief Inspector of Boilers, or by at least 2 examiners to be appointed by said chief inspector. The person to be examined must pay an examination fee of $10. Such examination must be written or part written and part oral, recorded in writing, and must be confined to questions the answers to which will aid in determining the fitness and competency of the applicant for the intended service and must be of uniform grade throughout the State. The chief inspector shall certify to the commissioner the names of applicants who have successfully passed the examination. In case an applicant for an inspector's certificate of authority fails to pass this examination, he may appeal to the Board of Boiler Rules for a 2nd examination, which shall be given by said board, or, by examiners other than those by whom the first examination was given and these examiners shall be appointed forthwhile to give said 2nd examination. Upon the result of this examination on appeal, the board shall determine whether the applicant be qualified. The record of an applicant's examination, whether original or on appeal, shall be accessible to him and to his employer.

The fee for issuing a certificate of authority as authorized inspector shall be $10 when such certificate is granted under the provisions of section 70, to a person who holds a certificate as an inspector of steam boilers for a state that has a standard of examination equal to that of this State or a certificate from the National Board of Boiler and Pressure Vessel Inspectors, and whose examination has been waived in accordance with the provisions of section 70.

A certificate of authority may be revoked by the commissioner for incompetence or untrustworthiness of the holder thereof or for willful falsification of any matter or statement contained in his application or in a report of any inspection. A person whose certificate is revoked may appeal from the revocation to the Board of Boiler Rules which shall hear the appeal and either set aside or affirm the revocation and its decision shall be final. The person whose certificate has been revoked shall be entitled to be present in person and by counsel on the hearing of the appeal. If a certificate is lost or destroyed a new certificate shall be issued in its place without another examination. A person who has

failed to pass the examination or whose certificate of authority has been revoked, shall be entitled to apply for a new examination and certificate after 90 days from such failure or revocation.

Sec. 72. Inspection of boilers; certificates issued. 1955, c. 404, § 2. 1963, c. 124, § 2. Each steam boiler used or proposed to be used within this State and all hot water supply and hot water heating boilers located in schoolhouses, and all boilers owned by municipalities, except boilers exempt under the provisions of section 78, shall be thoroughly inspected while not under pressure by the chief inspector or by one of the deputy inspectors or authorized inspectors provided for herein, as to its design, construction, installation, condition and operation. Each steel boiler shall be inspected internally and externally; and all normally accessible surfaces of cast iron boilers shall be cleaned for inspection but need not be dismantled unless in the opinion of the inspector it is necessary. If it shall be found to be suitable and to conform to the rules of the Board of Boiler Rules, upon payment by the owner or user of such a boiler of the sum of $2 to the chief inspector, the latter shall issue to such owner or user an inspection certificate for each such boiler. Inspection certificates shall specify the maximum pressure that the boiler inspected may be allowed to carry. Such inspection certificate shall be valid for not more than 14 months from its date and it shall be posted under glass in the engine or boiler room containing such boiler or an engine operated by it, or, in the case of portable boiler, in the office of the plant where it is located for the time being. The chief inspector or any deputy inspector may at any time suspend an inspection certificate when, in his opinion, the boiler for which it was issued may not continue to be operated without menace to the public safety or when the boiler is found not to comply with the rules herein provided for, and an authorized inspector shall have corresponding powers with respect to inspection certificates for boilers insured by the company employing him. Such suspension of an inspection certificate shall continue in effect until said boiler shall have been made to conform to the rules of the board and until said inspection certificate shall have been reinstated by a state inspector, if the inspection certificate was suspended by a state inspector, or by an authorized inspector if it was suspended by an authorized inspector. Not more than 14 months shall elapse between such inspections and there shall be at least 4 such inspections in 37 consecutive months. Each such boiler, except miniatures, shall also be inspected externally while under pressure with at least the same frequency and at no greater intervals.

Sec. 73. Temporary inspection certificates. 1957, c. 272, § 3. 1963, c. 124, § 2. Whenever it shall appear to the commissioner that an emergency affecting public safety and welfare exists, the commissioner may authorize the chief inspector to issue a temporary inspection certificate for a period not exceeding 6 months after an inspection certificate shall have expired. A temporary inspection certificate may be issued without an internal inspection being made. If the boiler is insured, the temporary inspection certificate shall not be issued until recommended in writing by the authorized inspector of the company insuring the boiler and by the chief inspector or one of his deputies; or, if the boiler is not insured, the temporary inspection certificate shall be recommended in writing by at least 2 authorized state inspectors. The provisions as to posting of the inspection certificate shall apply to the temporary inspection certificate.

Sec. 74. Inspection certificate. 1957, c. 272, § 4. It shall be unlawful for any person, firm, partnership or corporation to operate under pressure in this State a steam boiler to which sections 64 to 84 apply without a valid inspection certificate as provided for in said sections. The operation of a steam boiler without an inspection certificate shall constitute a misdemeanor on the part of the owner or user thereof and be punishable by a fine of not more than $100 or by imprisonment for not more than 30 days, or by both.

Sec. 75. Installation of new boilers. No new steam boiler which does not conform to the rules formulated by the Board of Boiler Rules governing new installations shall be installed in this State.

All new boilers to be installed shall be inspected during construction by an inspector authorized to inspect boilers in this State, or, if constructed outside the State, by an inspector holding a cerificate of authority from the chief inspector of this State or an inspector who holds a certificate of inspection issued by the National Board of Boiler and Pressure Vessel Inspectors.

Sec. 76. Inspection charge. The owner or user of a steam boiler, required by the provisions of sections 64 to 79 to be inspected by the chief inspector or his deputy inspectors, shall pay the inspector upon inspection $10. For the internal and external inspection of a boiler while not under pressure having a grate area of more than 10 square feet or equivalent, the fee shall be $10 and, in addition, 10c for every square foot of grate area in excess of 10 square feet or equivalent. In cases of a specially designed boiler wherein no grate area exists, the

board is authorized to set the fee on the basis of the maximum horsepower that can be generated. For the external inspection of a boiler while under operation conditions, the fee shall be $3. For the inspection of a miniature boiler, the fee shall be $3. For a hydrostatic test of any boiler except miniature boilers, a fee of $5 shall be charged in addition to the inspection fees hereinbefore provided for; provided that not more than $20 shall be collected for such inspection of any one boiler made for any one year exclusive of the fee for hydrostatic test unless additional inspections are required by the owners or users of the same or unless the boiler has been inspected and a certificate has been refused, withheld or withdrawn, or unless an additional inspection is required because of the change of location of a stationary boiler. The type and size of the minature boiler to be inspected shall be determined by the Board of Boiler Rules. The inspector shall give receipts for said fees and shall pay all sums so received to the chief boiler inspector who shall pay the same to the commissioner, who shall turn same over to the Treasurer of State to be credited to the General Fund.

Note: (Under the authority of the above section the board of boiler rules has adopted the following charges, that the internal inspection charge for package type boilers and forced circulation boilers be at the rate of $10.00 up to 100 H.P. and 10 cents per H.P. for each additional, up to a maximum fee of $17.00. Horsepower to be determined on a manufacturers' catalogue rating and if this is not obtainable, on the water heating surface in square feet.)

Sec. 78. Exemptions. 1957, c. 272, § 6. The provisions of sections 64 to 84 shall not apply to boilers which are under federal control; or those under the control of the Public Utilities Commission; or to boilers used solely for propelling motor road vehicles; or to boilers of steam fire engines brought into the State for temporary use in times of emergency to check conflagrations; or to boilers used for agricultural purposes only; or to steam heating boilers, except boilers located in schoolhouses or boilers owned by municipalities, which carry pressures not exceeding 15 pounds per square inch, constructed and installed in accordance with the rules adopted by the Board of Boiler Rules; or to miniature boilers exempt by the provisions of section 76.

Sec. 79. Chief and deputy inspectors to furnish bond. The chief inspector and each deputy inspector shall furnish such bond as may be required by law.

Sec. 80. Registration of certain steam boiler or unfired steam pressure vessels; registered boilers stamped. No steam boiler or unfired steam pressure vessel subjected to a pressure of over 15 pounds to the square inch shall be operated in this State unless such boiler or unfired steam pressure vessel shall have been registered in the office of the department, upon blanks to be furnished by said department upon

request, such blanks to contain information regarding maker's name, type of construction, date of construction, age, location and when last inspected, and such other information as may be required by said department.

After a steam boiler has been registered in the department, said department shall furnish, and the owner or user shall stamp or have stamped a number as given, on the shell of the boiler in the space commonly used for such purposes, with letters and figures not less than 3/8 of an inch high. Any person, firm or corporation who fails to so stamp or obliterates or covers such numbers shall be punished by a fine of not more than $100.

Whoever fails to so register any steam boiler or unfired steam pressure vessel shall be punished by a fine of $10.

In case a boiler or unfired steam pressure vessel, subject to the provisions of this section, is moved from one location to another, notice shall be given the department of such removal and of the new location in which the boiler is to be set up.

The provisions of this section shall not apply to boilers subject to federal inspection and control, or to boilers used in steamboats, or those under the control of the Public Utilities Commission or boilers used in automotive vehicles.

Sec. 81. Inspection reports. In case a boiler is insured and inspected by a duly accredited insurance company licensed to do business in this State, a copy of the record of each internal inspection of such boiler shall be filed with the department.

In case an insurance company cancels insurance upon any steam boiler carrying over 15 pounds gauge pressure or the policy expires and is not renewed, notice shall immediately be given the department. Any insurance company shall likewise notify said department immediately upon the placing of insurance on such boiler.

Sec. 82. Condemned vessels stamped. Every steam boiler or unfired steam pressure vessel condemned in this State shall be stamped in the following manner, "XXX Me.," and the department shall immediately be notified of such condemnation.

The stamp "XXX Me." placed on condemned boilers shall be made across the registration mark or number of the boiler, or if the boiler has no registration mark or number, a stamp shall be placed in the location of this mark as determined by the rules of the American Society of Mechanical Engineers' Boiler Code.

The stamping shall be done with individual letters, driven into the plate so far as to thoroughly cancel any previous registration and shall be made with letters at least 3/8 of an inch high.

Any person who obliterates such condemnation mark shall be punished by a fine of not less than $100.

The laws and regulations of the American Society of Mechanical Engineers' Boiler Code shall be used in all mathematical computations necessary to determine the safety of a boiler.

Sec. 83. Operation of condemned vessels. 1955, c. 404, § 3. 1957, c. 272, § 7. No steam boiler or unfired steam pressure vessel that has been condemned for further use in this or any other state by an authorized boiler inspector employed by an insurance company or by an inspector authorized to inspect boilers by a state or the Federal Government shall be operated in this State at a gauge pressure of over 15 pounds. Each steam boiler or unfired steam pressure vessel located in a schoolhouse or owned by a municipality, if condemned, shall not be operated.

Whoever operates a boiler in violation of the provisions of this section shall be punished by a fine of not less than $100.

Sec. 84. Welding on boilers; certificates for welders. No journeyman welder performing welding work for hire shall make welding repairs to any steam vessel which carrier a steam pressure of more than 15 pounds per square inch without first receiving authorization to do so from the chief boiler inspector, provided that the foregoing provision shall not apply to persons who hold certificates or standing authorization from the Board of Boiler Rules.

The Board of Boiler Rules is authorized to make, amend or rescind reasonable rules and regulations relating to qualifications of journeyman welders performing welding for compensation and is further empowered to conduct examinations, issue certificates and to charge a reasonable fee for such examinations and for such certificates.

Any person violating the provisions of this section may be punished by a fine of not more than $100.

Sec. 85. Steam heating plants. Whenever any school building, church or other public building is heated by a steam plant located in, under or near such building, such steam plant shall be in charge of a person qualified as provided in the following section.

Sec. 86. Applicant examined by municipal officers; certificate; filing. The municipal officers of any town or city, in which any of the build-

ings enumerated in the preceding section, heated by steam, are located, shall require the person or persons contemplating taking charge of the steam plant for such purpose, to appear before them, and they shall require him to produce before them satisfactory evidence of his competency to have charge of such steam plant; and unless the person so applying has been licensed as an engineer, or has had previous experience as a machinist or as an engineer of a steam plant, he shall be required to satisfy said municipal officers that he possesses the requisite qualifications and experience to assume charge of the particular plant which he desires permission to operate; and if said municipal officers, after such examination, are satisfied that the applicant possesses the requisite qualifications for such work and is of temperate habits, they or the majority thereof shall issue under their hands a certificate in the following form:

"STATE OF MAINE

City (or) Town of

This is to certify that having made application to the municipal officers of the city (or) town of , for permission to take charge of, and operate a steam plant located in said city (or) town, (here describe the nature of the steam plant of which the applicant is authorized to have charge, and its location); and having produced evidence of his competency to act in said capacity, we have issued to him this certificate as provided by Section 86 of Chapter 30 of the Revised Statutes."

Said certificate when issued shall be filed in the office of the city or town clerk, and such clerk shall issue and deliver to said applicant a duly attested copy of such certificate, and the copy so issued shall be posted by the holder thereof, in a conscicuous place in or near the room in which the boiler to be operated is located. Municipal officers shall not issue the certificate provided for by this section without receiving proof that the person to whom such certificate is issued has had experience in such work, and is in all respects qualified to discharge the duties referred to in the certificate granted, and is also of temperate habits.

Sec. 87. Duty of municipal officers when notice is received that person in charge of steam heating plant is incompetent. Whenever the municipal officers of any town or city receive notice in writing, signed by 10 or more of the residents thereof, stating that the person in charge of a steam plant located in, under or near any school building,

church or other public building situated in said city or town, and furnishing or supplying heat for such building, is incompetent for the discharge of such duties, or by reason of negligence, intemperance or any other cause ought not longer to remain in charge of such steam plant, said municipal officers shall immediately suspend temporarily the authority of such person to act in said capacity; and, until the investigation herein provided can be made, shall cause a person qualified as provided by the preceding section to be placed in charge of said steam plant. The municipal officers shall, as soon thereafter as practicable, cause an investigation of such complaint to be made, and shall thereupon inquire into the habits and qualifications of the person so complained of, and if such person is, for any reason, found to be incompetent or unsuitable to longer remain in charge of said steam plant, they shall immediately cause the certificate granted under the provisions of the preceding section to be revoked, and notice of such revocation shall be filed with the clerk of such city or town; and thereupon said municipal officers shall, if such plant is under their control, place a person qualified as herein provided in charge thereof; and if such steam plant is not in charge of such municipal officers, they shall give the person or corporation having the control of such steam plant notice of their findings, and if such person or corporation having control of such steam plant shall, after receipt of such findings, neglect or refuse to cause said steam plant to be placed in charge of some person qualified under the provisions of the preceding section, such person or corporation shall be subject to the penalties provided in the following section.

Sec. 88. Penalty. Whoever violates any provision of the 3 preceding sections shall be punished by a fine of not more than $50, or by imprisonment for not more than 90 days, or by both such fine and imprisonment.

See c. 130, § 9, re penalty for negligent management of steam boiler resulting in loss of life.

RULES AND REGULATIONS

ADOPTED BY THE BOARD OF BOILER RULES UNDER AUTHORITY OF SECTION 67, CHAPTER 30, R.S. 1954

Definitions

1. "Department" shall mean the State Department of Labor and Industry.

2. The word "inspector" shall mean the chief inspector of boilers or a deputy inspector of boilers of the Department; or an authorized inspector of boilers employed by a duly authorized insurance company, holding a Certificate of Authority as provided for in Sec. 70, Ch. 30, R.S. 1954.

3. The term "approved" shall mean rules, regulations and appliances as approved by the Board of Boiler Rules as provided in Sec. 67, Chap. 30, R.S. 1954.

The word "pressure" shall mean gage pressure.

4. "A boiler" is a closed vessel in which steam or vapor is generated by the application of heat.

5. (a) Boilers installed before February 8, 1963 to which the classification "miniature" shall apply, shall embrace fired pressure vessels which carry steam pressures over 15 pounds per square inch and do not exceed any of the following limits:

16 in. inside diameter of shell
42 in. length of shell
20 sq. ft. water heating surface
100 psig. maximum allowable working pressure

Where any of the above limits is exceeded, the rules for Power Boilers shall apply.

(b) Boilers installed after February 8, 1963 to which the classification "miniature" shall apply, shall include those boilers which carry steam pressures over 15 pounds per square inch and do not exceed any of the following limits:

16 in. inside diameter of shell
5 cu. ft. gross volume, exclusive of casing and insulation
100 psig. maximum allowable working pressure

Where any of the above limits is exceeded, the rules for Power Boilers shall apply.

References

All references to "P" are to paragraph numbers of the ASME Power Boiler Code.

All references to the "ASME Code" are to the American Society of Mechanical Engineers Boiler and Pressure Vessel Code, 1962 edition.

All references to "American Standard" and "American Standards" in these rules and regulations, are to the applicable standards of the American Standards Association for valves, fittings and flanges referred to in Tables A-5 to A-12 inclusive, given in the Appendix of the ASME Power Boiler Code, 1962 edition.

SECTION I

NEW INSTALLATIONS

POWER BOILERS

Rule 101. (A) All new power boilers installed in this State after May 8, 1963 to carry pressures in excess of fifteen (15) pounds per square inch, except boilers exempt under Sec. 78, Ch. 30, R.S. 1954, amended 1957, shall be constructed, inspected, stamped and installed in accordance with the rules and regulations of the 1962 edition of Section I, Power Boilers of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code including the Preamble and the Appendix thereof and any adopted amendments thereto, and to the rules hereinafter provided. Such boilers may be stamped with the approved stamping and registration number of the National Board of Boiler and Pressure Vessel Inspectors in lieu of the aforementioned ASME stamping. The assigned State of Maine registration number followed by the letters "ME" shall be stamped on all power boilers with numerals and letters not less than three-eights (3/8) of an inch in height, to conform with the provisions of Sec. 80, Ch. 30, R.S. 1954, before such boilers may be operated in this State.

(B) **No Boiler or boilers** of longitudinal lap seam construction not installed and operating in the State prior to January 1st, 1951 shall be installed and operated within the State at over 15 pounds pressure.

(C) **Data Sheets.** All manufacturers of said steam boilers are required to furnish the Department with shop data sheets for such new boilers.

Rule 102. Emergency exists. Boilers shall be so located and so equipped that adequate egresses are provided to permit safe and quick escape of any person in case of emergency; this shall be understood to include suitable and sufficient permanent stairs or ladders from boiler tops and elevated appurtenances and appliances which are located more than 8 feet above the floor, walkway or platform nearest thereto, except water columns and gage glasses. Water columns or gage glasses which are located over 10 feet above the floor or a walkway shall be provided with a suitable platform beneath them, which need not be provided with a permanent means of egress.

Rule 103. *(A) **Mechanical fuel and feed.** All boilers hereafter installed with mechanical fuel devices shall be provided with automatic

*Adopted May 27, 1947, amended April 9, 1952 and June 1, 1953.

low water cutouts of the manual reset type, except in the case where there is a constant attendant.

Exception: This Rule shall not apply to boilers generally known as Clayton Forced Circulation Steam Generators.

(B) **Fuel cutouts and regulators.** Fuel cutouts, water feeding and regulating devices of the float type shall comply with the following requirements: The water feed valve shall be separate from the float chamber and sufficiently isolated or insulated from the heat to insure a temperature at which scale will not be deposited. It shall be so connected to the boiler that the water is fed through the regular feed connection and not through the float chamber, water column or water glass connections. The valve shall be of sufficient capacity to maintain the proper water level under all operating conditions.

The float chamber of a water feeder or regulator shall be set at a level that will start feeding a power boiler when the water level drops below the predetermined water level of the particular boiler. If a fuel cutout switch is attached, it shall be so set or adjusted that it will shut off the fuel supply if the water gets lower than one-quarter (¼) inch above the lowest visible level of the gage glass. The metal of the float chamber shall be strong enough to withstand the pressure to which it is to be subjected, and pressure allowable should be marked on same.

(C) **Connections.** If a float chamber is installed between the boiler and a gage glass or water column, "T" or "Y" fittings shall be used for the attachment of the float chamber to the connections in question, said fittings to be attached as close as possible to the boiler. The straight-way tapping of the "T" or the "Y" to take the water glass or water column and the side outlet of the "T" or "Y" to take the connection to the float chamber. The ends of all nipples shall be reamed to full size. The fittings shall comply with requirements of P-299 A.S.M.E. Code. If shutoff valves are used on the connections between the float chamber and the boiler, they shall be of the outside-screw-and-yoke type or stop cocks with a plug held in place by a guard or gland with permanent handles attached thereto and marked in line with their passage, or of such other thru-blow construction as to prevent stoppage by deposits of sediment, and to indicate by the position of the operating mechanism whether it is in open or closed position; and such valves should be locked or sealed open.

(D) **Blow downs.** A blowoff shall be attached to the float chamber to facilitate the removal of deposits and to permit testing the device

without lowering the water level in he boiler. Blowoff connections shall be at least one-half (½) inch and so arranged that the lowest part of the float chamber may be completely drained.

(E) **Floats.** The float shall have a displacement adequate to insure positive movement of the mechanism operating the feed valve and/or the cutoff switch. It should be tested against collapse at a pressure of at least twice the boiler pressure for high pressure boilers.

(F) **Pipes—Valves.** Bearings, pipes, water valves and seats and other similar parts shall be of material that is resistant to corrosion.

(G) **Switches.** Electric switches shall be designed to prevent deterioration from atmosphere conditions and be approved.

(H) **Clean outs—inspection openings.** Accessibility for inspections, cleaning and repairing shall be provided for all parts.

Rule 104. Fittings. All valves and fittings shall be marked with the name, trade-mark, or other identification of the manufacturer and the primary service pressure rating except that the pressure rating marking may be omitted from:

(1) Cast-iron screwed fittings for 125 lb. working pressure;
(2) Malleable iron screwed fittings for 150 lb. working pressure;
(3) Nonferrous screwed fittings for 125 and 250 lb. working pressure;
(4) Cast-iron and nonferrous companion flanges;
(5) Butt-welding fittings.

Additional markings as called for by the several Code Standards for all valves and fittings are recommended if the size and shape of the valve or fitting permit.

Rule 105. Valves—feedwater. All valves and fittings on all feedwater piping from the boiler to and including the first stop valve next to the boiler and the check valve (see Rule 131) shall be equal at least to the requirements of any standard accepted by the ASME Code for a pressure that shall exceed the maximum allowable working pressure of the boiler by either 25 per cent or 225 psi, whichever is less, and for a temperature corresponding to the temperature of saturated steam at the maximum allowable working pressure of the boiler, except that for pressures not exceeding 100 psi, the valves and fittings shall be equal, at least, to the applicable requirements of the American Standards for 125 psi given in Tables A-7 and A-11 of the ASME Code.

Rule 106. Regulating valves—feedwater. All valves and fittings for feedwater piping between the required check valve (see Rule 131) and the globe or regulating valve, when required by Rule 131, and including any by-pass piping to and including the shutoff valves in the by-pass, shall be equal at least to the requirements of any Standard accepted by the ASME Code for a pressure rating not less than the expected operating pressure required to feed the boiler and for the temperature corresponding to the temperature of saturated steam at the maximum allowable working pressure of the boiler.

Rule 107. Material for valves—fittings. Valves and fittings made of any material permitted by the ASME Code for pressure ratings of 125 lbs. or more and marked as required by said Code may be used for feed line and blowoff line service at pressures up to 80 per cent of their American Standard primary service pressure ratings, except where certain materials are specified or prohibited, and in no case shall they be used for temperatures exceeding those shown for the stresses given in Tables P-6 and P-7 or for pressures and temperatures permitted in Par. P-12 of the ASME Code, for the materials used.

Rule 108. Piping—connections. Piping, connected to the outlet of a boiler for any purpose, and which comes within the Code requirement, shall be attached by:

(1) Screwing into a tapped opening with a screwed fitting or valve at the other end;

(2) Screwing each end into tapered flanges, fittings, or valves with or without rolling or peening;

(3) Bolted joints including those of the Van Stone type;

(4) Expanding into grooved holes, seal welding if desired.

Blowoff piping of fire-tube boilers shall be attached by (1) if exposed to products of combustion, or by (1), (2), or (3) if not so exposed.

Rule 109. Seal welding. Fusion welding for sealing purposes at the juncture of bolted joints may be used.

Rule 110. Welded connections. Welding may be used to attach piping to nozzles or fittings if the rules for fusion welding or forge welding are followed.

Rule 111. Welded piping. When piping which comes within the scope of these rules and regulations is fabricated or installed by welding, the welding shall be done in accordance with all applicable pro-

visions of the Rules for Welded Construction as given in Pars. P-61 through P-97 of the ASME Code and by a fabricator or contractor who is authorized to use any of the ASME Code symbol stamps described in Fig. P-41 and Fig. P-49 or the "S" symbol stamp shown in Fig. P-48 of the ASME Code. Such welded piping shall be inspected by an authorized inspector at such stages of the work as the inspector may elect.

For main steam connections, feed inlet connections, blowoff connections and other connections external to the boiler, over 2 in. pipe size, fabricated or installed by welding, the ASME Code symbol shall be stamped on the pipe, valve or fitting adjacent to the welded joint farthest from the boiler, that comes within the scope of these rules and regulations, also, in the same location, in letters and figures at least 5/16 in. high shall be stamped the name of the fabricator or contractor, or an acceptable abbreviation thereof, his serial number for the piping, and the year fabricated or installed. Said stamping shall not be covered by insulation or lagging.

The requirements for the ASME Code symbol stamp given in this rule may be waived when piping covered in this rule is welded by a welder possessing a valid Certificate of Authority as a Metal-Arc Welder issued by the Department in accordance with Section 5 of the State of Maine Boiler Rules and Regulations.

Rule 112. Welded piping—inspection and data reports. When piping external to the boiler as included in Rule 111 is fabricated or installed by welding, such piping shall be tested by hydrostatic test of 1½ times the maximum allowable working pressure witnessed by a duly authorized inspector of steam boilers.

When piping defined in this rule is fabricated or installed by welding by other than the manufacturer of the boiler to which it is attached, each fabricator, contractor or subcontractor for the piping fabrication or installation shall furnish the Department a data report on Form P-4A of the ASME Code covering the shop inspection or the field assembly inspection for which each is responsible. In each case, the shop inspection, and field assembly inspection shall be made by a duly authorized inspector of steam boilers who shall complete and sign the Certificate of Shop Inspection, or the Certificate of Field Inspection of the data report, whichever may apply.

Rule 113. Piping threads required. The minimum number of threads that a pipe or fitting shall screw into a tapped hole shall corre-

spond to the numerical values given for the number of threads in Table P-12 ASME Code.

Rule 114. Stop valves. Each steam-discharge outlet, except safety-valve and superheater connections, shall be fitted with a stop valve located at an accessible point in the steam delivery line and as near to the boiler nozzle as convenient and practicable. When such outlets are over 2-in. pipe size, the valve or valves used on the connection shall be of the outside-screw-and-yoke rising-spindle type so as to indicate at a distance by the position of its spindle whether it is closed or open and the wheel may be carried either on the youke or attached to the spindle. A plug-cock type valve may be used provided the plug is held in place by a guard or gland, and it is equipped to indicate at a distance whether it is closed or open and it is equipped with a slow-opening mechanism.

Rule 115. Superheater, valves. If a shutoff valve is used between the boiler and its superheater, the safety-valve capacity on the boiler proper must comply with the requirements of P-270, and P-274 ASME Code, no credit being taken for the safety valve on the superheater, and the superheater must be equipped with safty-valve capacity as required by P-288 ASME Code. In a separately fired superheater installation, a stop valve is not required at the inlet or the outlet of the superheater.

Rule 116. Stop valves. When boilers are connected to a common steam main, the steam connection from each boiler having a manhole opening shall be fitted with two stop valves having an ample free-blow drain between them. The discharge of this drain shall be visible to the operator while manipulating the valve. The stop valves shall consist preferably of one automatic non-return valve (set next to the boiler) and a second valve of the outside-screw-and-yoke type; or, two valves of the outside-screw-and-yoke type shall be used.

Rule 117. Stop valves—when two are used. When a second steam stop valve or valves is required, it shall have a pressure rating at least equal to that required for the expected steam temperature and pressure at the valve, or the pressure rating shall be not less than 85 per cent of the lowest set pressure of any safety valve on the boiler drum and for the expected temperature of the steam at the valve, whichever is greater.

Rule 118. Stop valve—drains. When a stop valve is so located that water can accumulate, ample drains shall be provided. All drain lines, including pipe, fittings, and valves, shall comply with the requirements for steam piping or water piping according to the service.

Rule 119. Blowoff piping. A blowoff as required herein is defined as a pipe connection provided with valves through which the water in the boiler may be blown out under pressure, excepting drains such as are used on water columns, gage glasses, or piping to feedwater regulators, etc., used for the purpose of determining the operating condition of such equipment. Piping connections used primarily for continuous operation, such as deconcentrators on continuous blowdown systems, are not classed as blowoffs but the pipe connections and all fittings up to and including the first shut-off valve shall be equal at least to the pressure requirements for the lowest set pressure of any safety valve on the boiler drum and with the corresponding saturated steam temperature.

Rule 120. Blowoff valves and cocks. (a) Each boiler shall have a bottom blowoff pipe fitted with a valve or cock in direct connection with the lowest water space practicable.

(b) The minimum size of pipe and fittings shall be 1 in., and the maximum size shall be 2½ in., except that for boilers with 100 sq. ft. of heating surface, or less, the minimum size of pipe and fittings may be ¾ in.

(c) Straight-run globe valves of the ordinary type as shown in Fig. P-43 (a), or valves of such type that dams or pockets can exist for the collection of sediment, shall not be used on such connections.

(d) Straightway "Y"-type globe valves, or angle valves, may be used in verticle pipes, or they may be used in horizontal runs of piping provided they are so constructed or installed that the lowest edge of the opening through the seat shall be at least 25 per cent of the inside diameter below the center line of the valve.

(e) Return connections of the same size or larger than the size herein specified may be used, and the blowoff may be connected to them. In such case the blowoff must be so located that the connection may be completely drained.

Rule 121. Blowoff cocks, type. A bottom blowoff cock shall have the plug held in place by a guard or gland. The end of the plug shall be distinctly marked in line with the passage.

Rule 122. Blowoff, size—fittings—material. (a) The blowoff valve or valves and the pipe between them and the boiler shall be of the same size except where a larger pipe for the return of condensation is used.

(b) All fittings between the boiler and valves shall be of steel for pressures over 100 psi.

(c) In all cases the valves and fittings from the boiler to and including the required blowoff valves shall be equal, at least, to the applicable requirements of the American Standards given in Tables A-5 to A-8 inclusive and A-11 of the ASME Code for a pressure that shall exceed the maximum allowable working pressure of the boiler, by either 25 per cent or 225 psi, whichever is less, and for a temperature corresponding to the temperature of saturated steam at the maximum allowable working pressure of the boiler, except that for pressures not exceeding 100 psi, the valves and fittings shall be equal, at least, to the applicable requirements of the American Standards for 125 psi given in Tables A-7 and A-11 of the ASME Code.

(d) For pressures exceeding 100 psi, the blowoff valves shall, if of cast iron, be equal at least to the requirements of the American Standards for 250 lbs. as given in Tables A-8 and A-11 of the ASME Code; and if of steel construction shall be equal to the requirements of the American Standards as given in Table A-6 of the ASME Code, subject to Par. P-299(e) of said Code. Brass or bronze blowoff valves used for pressures in excess of 100 psi shall be equal at least to the strength requirements of the American Standard cast-iron fittings which would otherwise be required.

(e) For pressures over 200 psi, blowoff valves or cocks shall be of steel construction equal at least to the requirements of the American Standard as given in Table A-6 of the ASME Code, subject to Par. P-299)(e) of said Code and corresponding to the maximum working pressure of the boiler but in no case shall they have a primary service pressure rating of less than 300 psi.

(f) The pipe used in blowoff piping between the boiler and the blowoff valve or valves required by these rules and regulations shall conform to the requirements of Par. P-25 of the ASME Code, except that pipe of galvanized wrought iron, galvanized steel, brass or copper shall not be used. For pressures above 100 psi the wall thickness shall

not be less than that specified for Schedule 80, or extra heavy grade, pipe.

Rule 123. Number valves required. On all boilers, except those used for traction and/or portable purposes, when the allowable working pressure exceeds 100 psi, each bottom blowoff pipe shall have two slow-opening valves, or one slow-opening valve and a quick-opening valve or a cock complying with the requirements of P-310 ASME Code.

By "slow-opening valve" is meant one which requires at least five 360° turns of the operating mechanism to change from full-closed to full-opening and vice versa.

Rule 124. Multiple blowoffs. (a) On a boiler having multiple blowoff pipes, a single master valve may be placed on the common blowoff pipe from the boiler, in which case only one valve on each individual blowoff is required. In this case either the master valve or the individual valves or cocks must be of the slow-opening type.

(b) Two independent slow-opening valves, or a slow-opening valve and a quick-opening valve, or a cock may be combined in one body provided the combined fitting is the equivalent of two independent slow-opening valves, or a slow-opening valve and a quick-opening valve or a cock so that the failure of one to operate could not affect the operation of the other.

All waterwalls and water screens forming parts of a boiler, which do not drain back into the boiler, and all integral economizers, shall be equipped with a valved blowoff pipe conforming to the applicable requirements of Rules 120 through 126 of these Rules and Regulations, except that, when the valve or valves for such waterwalls, water screens, and integral economizers are not intended for blowoff purposes but are meant to be used only for draining purposes when the boiler is not under pressure, each such drain connection may be fitted with a single shutoff valve of a type that can be locked in the closed position, or, provided a blank flange is inserted in a suitable flanged and bolted connection located in the drain line on the downstream side of the valve. When such a single shutoff valve is used for draining purposes as provided for in this rule, it need not be designed specifically for blowoff service but it shall be adequate for the pressure and temperature conditions corresponding to the maximum allowable working pressure of the boiler.

(c) The bottom blowoff pipes of every traction and/or portable boiler shall have at least one slow or quick-opening blowoff valve or cock.

Rule 125. Blowoff pipes, protection. A bottom blowoff pipe when exposed to direct furnace heat shall be protected by firebrick, or other heat-resisting material, so arranged that the pipe may be inspected.

Rule 126. Blowoff pipes, free movement. An opening in the boiler setting for a blowoff pipe shall be arranged to provide free expansion and contraction.

Rule 127. Feed piping. The feedwater shall be introduced into a boiler in such a manner that the water will not be discharged directly against surfaces exposed to gases of high temperature or to direct radiation from the fire, or close to any riveted joints of the furnace sheets or of the shell. For pressures of 400 lbs. or over, the feedwater inlet through the drum shall be fitted with shields, sleeves, or other suitable means to reduce the effects of temperature differentials in the shell or head. If necessary, the discharge end of a feed pipe shall be fitted with a baffle to divert the flow from the riveted joint.

Rule 128. Feedwater cold, all types boilers. Feedwater, other than condensate, shall not be introduced through the blowoff pipe.

Rule 129. Feedwater, entrance H.T. boilers. When a horizontal-return tubular boiler exceeds 40 in. in diameter, the feedwater shall discharge at about three-fifths the length from that end of the boiler which is subjected to the hottest gases of the furnace (except a horizontal-return tubular boiler equipped with an auxiliary feedwater heating and circulating device), above the central rows of tubes. The feed pipe shall be carried through the head or shell farthest from the point of discharge of the feedwater in the manner specified for a surface blowoff in P-307 ASME Code, and be securely fastened inside the shell above the tubes.

Rule 130. Feedwater, entrance V. T. boilers. In verticle tubular boilers having tubes 4 ft. or less in length, the feedwater shall be introduced at a point not less than one-fourth the length of the tube above the lower tube sheet or crown sheet. For tubes more than 4 ft. in length, the feedwater shall be introduced at a point not less than 12 in. above the crown sheet. When the boiler is under pressure, feedwater shall not be introduced through the openings or connections used for the water column, the water-gage glass, or the gage cocks. In closed systems the water may be introduced through any opening when the boiler is not under pressure.

In types of boilers where both internal and external pipes making a continuous passage are employed, the boiler bushing or its equivalent shall be used.

Rule 131. Valves in feed pipe. (a) The feed pipe shall be provided with a check valve near the boiler and a valve, or cock, between the check valve and the boiler, and when two or more boilers are fed from a common source, there shall also be a globe or regulating valve on the branch to each boiler between the check valve and the source of supply. Whenever globe valves are used on feed piping, the inlet shall be under the disk of the valve.

(b) When the supply line to a boiler is divided so as to feed a drum in more than one place, or to feed more than one drum, it is recommended that each such branch line be equipped with a stop and a check valve even though the common source is equipped as required by (a).

(c) If a boiler is equipped with duplicate feed arrangements, each such arrangement shall be equipped as required by the rules.

(d) A combination stop-and-check valve in which there is only one seat and disk, and a valve stem is provided to close the valve when the stem is screwed down, shall be considered only as a stop valve, and a check valve shall be installed as otherwise provided.

(e) Where an economizer or other feedwater-heating device is connected directly to the boiler without intervening valves, the feed valves and check valves required shall be placed on the inlet of the economizer or feedwater-heating device.

Rule 132. Feed pipe, size and means of feeding. A boiler having more than 500 sq. ft. of water-heating surface shall have at least two means of feeding, one of which shall be a pump, inspirator, or injector. Where a source of feed is available at a sufficient pressure to feed the boiler against a pressure 6 per cent higher than that at which the safety valve is set to blow, this may be considered one of the means. For boilers having a heating surface of not more than 100 sq. ft., the feed pipe shall be not less than ½ in. pipe size; and for boilers having more than 100 sq. ft. of heating surface, the feed pipe shall be not less than ¾ in. pipe size.

For boilers fired with fuels other than gaseous, liquid, or pulverized, if pumps only are used, one shall be steam driven.

Rule 133. Water fronts. Each boiler fitted with a water-jacketed boiler-furnace mouth protector, or similar appliance, having valves on

the pipes connecting them to the boiler, shall have these valves locked or sealed open. Such valves, when used, shall be of the straightway type.

Rule 134. Water-column pipes. The minimum size of pipes connecting the water column to a boiler shall be 1 in. For pressures of 400 lbs. or over, lower water column connections to drums shall be provided with shields, sleeves, or other suitable means to reduce the effect of temperature differentials in the shells, or heads. Water-glass fittings or gage cocks may be connected direct to the boiler.

Rule 135. Design, material. The design and material of a water column shall comply with the requirements of P-299. Water columns made of cast iron in accordance with Specifications SA-278 may be used for maximum boiler pressures not exceeding 250 psi. Water columns made of malleable iron in accordance with specification SA-47 may be used for maximum boiler pressures not exceeding 350 psi. For higher pressures, steel construction shall be used.

The steam and water connections to a water column or a water gage glass, including all pipe, fittings, valves and drains, shall comply with the requirements of P-9, P-23, or P-26, and P-300. These connections shall be such that they are readily accessible for internal inspection and cleaning. Some acceptable methods of meeting this requirement would be by providing a cross or fitting with a back outlet at each right angle turn to permit inspection and cleaning in both directions, or by using pipe bends or fittings of a type which does not leave an internal shoulder or pocket in the pipe connection and with a radius of curvature which will permit the passage of a rotary cleaner. The water column shall be fitted with a drain cock or drain valve with a suitable connection to the ashpit, or other safe point of discharge, and if the water connection thereto has a rising bend or pocket which cannot be drained by means of the water-column drain, an additional drain shall be placed on the connection in order that it may be blown off to clean any sediment from the pipe. The water-column blowoff pipe shall be at least ¾ in. pipe size.

Rule 136. Gage glasses—cocks. (a) When the gage glasses and gage cocks required by P-291 and P-294 are not connected directly to the shell or drum of a boiler, a water column shall be used into which the gage glass and gage cocks shall be connected, except as modified by the text preceding P-1.

(b) The lower edge of the steam connections to a water column and the boiler shall not be below the highest visible water level in the water gage glass.

There shall be no sag or offset in the piping which will permit the accumulation of water.

(c) The upper edge of the water connection to a water column and the boiler shall not be above the lowest visible water level in the gage glass.

No part of this pipe connection shall be above the point of connection at the water column.

Rule 137. Safety valve requirements. Each boiler shall have at least one safety valve and if it has more than 500 sq. ft. of water heating surface it shall have two, or more, safety valves. Safety valves shall be constructed in accordance with, and shall conform to, the requirements of the ASME Power Boiler Code pertaining thereto.

Rule 138. Capacity. The safety valve capacity for each boiler shall be such that the safety valve or valves will discharge all the steam that can be generated by the boiler without allowing the pressure to rise more than 6 per cent above the highest pressure at which any valve is set and in no case to more than 6 per cent above the maximum allowable working pressure.

Rule 139. Safety valves, settings. One, or more, safety valves on the boiler proper shall be set at, or below, the maximum allowable working pressure. If additional valves are used the highest pressure setting shall not exceed the maximum allowable working pressure by more than 3 per cent. The complete range of pressure settings of all the saturated steam safety valves on a boiler shall not exceed 10 per cent of the highest pressure to which any valve is set.

Rule 140. Mountings. When two or more safety valves are used on a boiler, they may be mounted either separately, or as twin valves, made by placing individual valves on Y bases, or duplex valves having two valves in the same body casing. Twin valves made by placing individual valves on Y bases, or duplex valves having two valves in the same body, shall be of equal size.

When not more than two valves of different sizes are mounted singly, the relieving capacity of the smaller valve shall not be less than 50 per cent of that of the larger valve.

Rule 141. Safety valve connections. The safety valve or valves shall be connected to the boiler independent of any other steam connection, and attached as close as possible to the boiler without any unnecessary intervening pipe or fitting. The connection between the boiler and the safety valve, or valves, shall not be fitted with any shutoff device of any description, and the internal cross-sectional area of said connection shall at least be equal to the aggregate internal cross-sectional area of the safety valve inlet, or inlets, connected thereto. Every safety valve shall be so installed as to stand upright with its spindle verticle.

Rule 142. Discharges—prohibited connections. No valve of any description shall be placed between the required safety valve or valves and the boiler, nor on the discharge pipe between the safety valve and the atmosphere. When a discharge pipe is used, the cross-sectional area shall be not less than the full area of the valve outlet, or of the total of the areas of the valve outlets discharging thereinto and shall be as short and straight as possible and so arranged as to avoid undue stresses on the valve or valves.

All safety-valve discharges shall be so located or piped as to be carried clear from running boards or platforms. Ample provision for gravity drain shall be made in the discharge pipe at, or near, each safety valve, and where water or condensation may collect. Each valve shall have an open gravity drain through the casing below the level of the valve seat. For iron and steel-bodied valves exceeding 2-in. size, the drain hole shall be tapped not less than $\frac{3}{8}$ in. pipe size.

Rule 143. Safety valves—forced-circulation boilers. (a) Safety valves used on forced-circulation boilers of the once-through type may be set and adjusted to close after blowing down not more than 10 per cent of the set pressure. The valve for this special use must be so adjusted and marked by the manufacturer.

(b) The blowdown adjustment shall be made and sealed by the manufacturer.

Rule 144. Testing. To insure the valve being free, each safety valve shall have a substantial lifting device by which the valve disk may be positively lifted from its seat when there is at least 75 per cent of full working pressure on the boiler. The lifting device shall be such that it cannot lock or hold the valve disk in lifted position when the exterior lifting force is released.

Rule 145. Repairs, by whom done. If the operating conditions of a safety valve are changed so as to require a new spring for a different

pressure, the valve shall be adjusted by the manufacturer, or his authorized representative, who shall furnish and install a new capacity name plate.

Rule 146. Water glasses. Each boiler shall have at least one water gage glass except that boilers operated at pressures over 400 psi shall be provided with two water gage glasses which may be connected to a single water column, or connected directly to the drum. The gage glass connections and pipe connections shall be not less than ½ in. pipe size. Each water gage glass shall be equipped with a valved drain.

The lowest visible part of the water-gage glass shall be at least 2 in. above the lowest permissible water level, which level shall be that at which there will be no danger of over-heating any part of the boiler when in operation at that level.

Boilers of the horizontal fire-tube type shall be so set that when the water is at the lowest reading in the water-gage glass there shall be at least 3 in. of water over the highest point of the tubes, flues, or crown sheet.

Rule 147. Water-gage glass—shutoffs. Each water-gage glass shall be equipped with a top and a bottom shutoff valve of such through-flow construction as to prevent stoppage by deposits of sediment and to indicate by the position of the operating mechanism whether they are in open or closed position. If stop cocks are used, they shall be of a type with the plug held in place by a guard or gland. The pressure-temperature rating shall be at least equal to that of the lowest set pressure of any safety valve on the boiler drum and the corresponding saturated steam temperature.

Straight-run globe valves of the ordinary type shall not be used on such connections. Automatic shutoff valves, if permitted to be used, shall conform to the requirements given in A-18 ASME Code.

Rule 148. Water columns—valves—types of. When shutoffs are used on the connections to a water column, they shall be either outside-screw-and-yoke or lever-lifting type gate valves, or stop cocks, with levers permanently fastened thereto and marked in line with their passage, or of such other through-blow construction as to prevent stoppage by deposits of sediment, and to indicate by the position of the operating mechanism whether they are in open or closed position; and such valves or cocks shall be locked or sealed open. Where stopcocks are used they shall be of a type with the plug held in place by a guard or gland.

Rule 149. Gage cocks, number of. Each boiler shall have three or more gage cocks located within the visible length of the water glass, except when the boiler has two water glasses located on the same horizontal lines.

Boilers not over 36 in. in diameter in which the heating surface does not exceed 100 sq. ft. need have but two gage cocks.

Rule 150. Outlets—exemptions. No outlet connections, except for damper regulator, feedwater regulator, drains, steam gages, or apparatus of such form as does not permit the escape of an appreciable amount of steam or water therefrom, shall be placed on the pipes connecting a water column to a boiler.

Rule 151. Steam gages. Each boiler shall have a steam gage connected to the steam space or to the water column or its steam connection. The steam gage shall be connected to a siphon or equivalent device of sufficient capacity to keep the gage tube filled with water and so arranged that the gage cannot be shut off from the boiler except by a cock placed near the gage and provided with a tee or lever handle arranged to be parallel to the pipe in which it is located when the cock is open. For boilers carrying 500 lb. pressure or over, valves may be used in place of cocks. Gage connections which are filled with water at a temperature never greater than that of saturated steam at a pressure of 250 psi, or 406° F, shall be of brass, copper, or bronze, or other noncorrosive composition suitable for the pressure and temperature conditions. Connections that are filled with steam or water of a temperature greater than that of saturated steam at a pressure of 250 psi, or 406° F, shall be of steel pipe or of other material capable of safely withstanding the temperatures corresponding to the maximum allowable working pressure. Where steel or wrought-iron pipe connections are used they shall be not less than 1 in. pipe size.

The wall thickness of all pipe connections shall comply at least with the requirement of P-23 ASME Code.

Where the use of a pipe longer than 10 ft. becomes necessary, an exception may be made to the rule that the gage must be arranged so that it cannot be shut off except by a cock placed near the gage, and a shutoff valve or cock arranged so that it can be locked or sealed open may be used near the boiler. Such a pipe shall be of ample size and so arranged that it may be cleared by blowing out.

Rule 152. Steam gage dials. The dial of the steam gage shall be graduated to approximately double the pressure at which the safety valve is set but in no case to less than 1½ times this pressure.

Rule 153. Test connection. Each boiler shall be provided with a ¼ in. pipe size valved connection for the exclusive purpose of attaching a test gage when the boiler is in service, so that the accuracy of the boiler steam gage can be ascertained.

Rule 154. Pitch of horizontal firetube boilers. In the setting of horizontal firetube boilers they shall be pitched toward the blow off outlet not less than 1 in. for each 10 ft. of tube length.

SECTION 2

EXISTING REGULATIONS

(The rules and regulations of this section apply only to boilers installed and in use previous to January 9, 1936).

Rule 201. Maximum pressure. The maximum allowable working pressure on the cylindrical shell of a boiler or drum shall be determined by the strength of the weakest course computed from the thickness of the plate, the efficiency of the longitudinal joint, or of the ligaments between the tube holes in shell or drum (whichever is the least), the inside radius of the course, and the maximum allowable unit working stress, using the following formula:

$$P = \frac{.8\ SEt}{R + 0.6t}$$

Where, P=Maximum allowable working pressure, pounds per square inch.

S=Maximum allowable unit working stress, in pounds per square inch, for the material, based on its minimum tensile strength as given in Table P7 of the ASME Power Boiler Code as designated in Rule 101, divided by the Factor of Safety required by Rules 202 and 421 hereof. Where the material cannot be identified, its minimum tensile strength shall be as given in Rule 203 hereof.

E=Efficiency of longitudinal joints or of ligaments between openings:

for riveted joint=calculated riveted efficiency, according to Par. P-181 of the ASME Power Boiler Code as designated in Rule 101.

for fusion welded joints=efficiency specified in Par. P-66 of the ASME Power Boiler Code as designated in Rule 101.

for seamless shells=100 per cent (unity)

for ligaments between openings, the efficiency shall be calculated by the rules given in Pars. P-192 and P-193 of the ASME Power Boiler Code as designated in Rule 101.

R=Inside radius of the weakest course of the shell or drum, inches.

t=Minimum thickness of shell plates in weakest course, inches.

Rule 202. Factors of safety. Boilers of butt strap longitudinal seam construction shall be operated with a factor of safety of at least 5.

Boilers of lap seam longitudinal construction in service when these rules became effective in 1935 shall be operated with a factor of safety of at least 5.75. In the year 1950 the factor of safety shall not be less than 6. At the beginning of every five year period thereafter, the factor of safety shall be increased 0.5.

In no case shall the maximum allowable working pressure on old boilers be increased, unless they are being operated at a lesser pressure than would be allowable for new boilers, in which case the changed pressure shall not exceed that allowable for new boilers of the same construction.

Rule 203. Tensile strength. When the tensile strength of steel or wrought-iron shell plates is not known, it shall be taken as 55,000 lbs. per sq. in. for steel and 45,000 lbs. per sq. in. for wrought-iron.

Rule 204. Strength of rivets in shear. In computing the ultimate strength of rivets in shear the following values in pounds per square inch of the cross-sectional area of the rivet shank shall be used:

Iron rivets in single shear	38,000
Iron rivets in double shear	76,000
Steel rivets in single shear	44,000
Steel rivets in double shear	88,000

The cross-sectional area used in the computations shall be that of the rivet shank after driving.

Rule 205. Crushing strength of mild steel. The resistance to crushing of mild steel shall be taken at 95,000 lbs. per sq. in. of cross-sectional area.

Rule 206. Rivets. When the diameter of the rivet holes in the longitudinal joints of a boiler is not known, the diameter and cross-sectional area of rivets, after driving, may be taken from the following Table or ascertained by cutting out one rivet in the body of the joint.

Table—Sizes of Rivets Based on Plate Thickness

Thickness of plate	1/4"	9/32"	5/16"	11/32"	3/8"	13/32"
Diameter of rivet after driving	11/16"	11/16"	3/4"	3/4"	13/16"	13/16"
Thickness of plate	7/16"	15/32"	1/2"	9/16"	5/8"	
Diameter of rivet after driving	15/16"	15/16"	15/16"	1 1/16"	1 1/16"	

Rule 207. Safety valve capacity. The safety valve capacity of each boiler shall be such that the safety valve or valves will discharge all the steam that can be generated by the boiler without allowing the pressure to rise more than 6 per cent above the highest pressure to which any safety valve on the boiler is set and in no case to more than 6 per cent above the maximum allowable working pressure of the boiler. Minimum safety valve relieving capacity requirements shall be determined in accordance with the provisions of Paragraphs P-274 or P-275 of the ASME Power Boiler Code.

Rule 208. Setting of safety valves. One or more safety valves on every boiler shall be set at or below the maximum allowable working pressure. The remaining valves may be set within a range of 3 per cent above the maximum allowable working pressure, but the range of setting of all of the valves on a boiler shall not exceed 10 per cent of the highest pressure to which any valve is set. No valve of any description shall be placed between the safety valve and the boiler nor on the escape pipe between the safety valve and the atmosphere. When an elbow is placed on a safety valve escape pipe, it shall be located close to the safety valve outlet, or the escape pipe shall be securely anchored and supported. When an escape pipe is used, it shall be full sized and fitted with an open drain to prevent water lodging in the upper part of the safety valve or escape pipe. Safety valves having either the seat or disc of cast iron shall not be used. Dead weight or lever weighted safety valves are prohibited.

Rule 213. Non-Code H.R.T. Boilers. Any horizontal return tubular boiler over thirty years old which was in use in this State before January 9, 1936 and which is not constructed and stamped in accordance with the rules of the ASME Power Boiler Code shall not be reinstalled to operate at any pressure in excess of 15 pounds per square inch.

Rule 214. Age limit of lap seam boilers. The maximum allowable working pressure for any fire tube boiler over 30 years old, the longitudinal joint or joints of which are of lap seam construction, shall be not over 50 pounds per square inch, and, when any such boiler attains an age requiring a factor of safety in accordance with the provisions of Rule 202 of these rules and regulations, its maximum allowable working pressure shall be reduced accordingly. No major repairs shall be made to any fire tube boiler of longitudinal lap seam construction after such boiler is over 30 years old.

Rule 215. Length of lap seams. Any boiler having a continuous lap seam more than 12 feet in length and a diameter over 36 inches when

removed from an existing setting shall not be reinstalled to operate at a pressure in excess of fifteen pounds per sq. in.

Rule 216. Cast-iron headers and mud drums. The maximum allowable working pressure on a water-tube boiler, the tubes of which are secured to cast-iron or malleable-iron headers, or which have cast-iron mud drums, shall not exceed 160 lbs. per sq. in.

Rule 218. Water glasses and gage cocks. Each steam boiler shall have at least one water glass, the lowest visible part of which shall be not less than 2 in. above the lowest permissible water level.

Each boiler shall have three or more gage cocks, located within the range of the visible length of the water glass, when the maximum allowable working pressure exceeds 15 lbs. per sq. inch, except when such boiler has two water glasses with independent connections to the boiler, located on the same horizontal line and not less than 2 ft. apart.

Locomotive-type boilers not over 36 in. in diameter, or any firebox or waterleg boiler in which the heating surface does not exceed 50 sq. ft., need have but two gage cocks.

The water column shall be fitted with a drain cock or drain valve with a suitable connection to the ashpit, or other safe point of waste and if the water connection thereto has a rising bend or pocket, which cannot be drained by means of the water column drain, an additional drain shall be placed on this connection in order that it may be blown off to clear any sediment from the pipe. The water column blow-off pipe shall be at least ½ inch pipe size.

Rule 219. Prohibited connections. No outlet connections, except for damper regulator, feed-water regulator, low water cut-outs, drains or steam gages, shall be placed on the pipes connecting a water column to a power boiler.

Rule 220. Steam gages. Each boiler shall have a steam gage connected to the steam space or to the water column or to its steam connection graduated to not less than one and one-half times the safe working pressure of the boiler. The steam gage shall be connected to a siphon or equivalent device of sufficient capacity to keep the gage tube filled with water and so arranged that the gage cannot be shut off from the boiler except by a cock placed near the gage and provided with a tee or lever handle arranged to be parallel to the pipe in which it is located when the cock is open. Where this pipe may be subject to freezing, a shutoff cock may be placed close to boiler to provide for removal or draining. Connections to gages shall be of brass, copper or

bronze composition. One-fourth inch Inspector's test gage connection shall be fitted so that the gage can be tested while the boiler is in operation.

Where the use of a pipe longer than 10 feet becomes necessary, an exception may be made to the rule that the gage must be arranged so that it cannot be shut off except by a cock placed near the gage. A shut-off valve or cock arranged so that it can be locked or sealed open may be used near the boiler. Such a pipe shall be of ample size and arranged so that it may be cleared by blowing out.

Rule 221. Stop valves. Each steam outlet from a power boiler (except safety valve connections) shall be fitted with a stop valve located as close as practicable to the boiler.

When a stop valve is so located that water can accumulate, ample drains shall be provided.

Rule 222. Bottom blow-off pipes. Each boiler shall have a blow-off pipe fitted with valve or cock in direct connection with the lowest water space practicable. When cocks are used they shall be of the gland or guard type and suitable for the pressure allowed. Straight run globe valves of the ordinary type, or valves of such types that drains or pockets can exist for the collection of sediment, shall not be used on blow-offs. Boilers carrying over 100 lbs. steam pressure shall have two valves or a valve and cock on the blow-off line.

The bottom blow-off pipe of every traction and/or portable boiler shall have at least one blow-off valve, conforming to the requirements of the ASME Code for the pressure allowed.

Rule 223. Blow-off piping, changes. When any changes or repairs are made in the blow-off pipe for existing installations:

The blow-off valve or valves and the pipe between them and the boiler shall be of the same size except where a larger pipe for the return of condensate is used.

All fittings between the boiler and valves shall be steel for pressures over 100 lbs.

When the pressure does not exceed 100 lbs. psi the valves and fittings shall be equal at least to the requirements of the American Standards for 125 lbs. psi.

For pressures exceeding 100 lbs. per sq. inch the valves, pipe and fittings shall be equal at least to the requirement of the American Standards for 250 lbs. per square inch.

For pressures over 250 lbs. per sq. inch the valves or cocks shall be of steel construction equal at least to the requirements of the ASME Code.

It is the interpretation of the Board that the requirements called for in Rules 222 *and* 223 *shall apply only when repairs become necessary unless apparatus or fittings in present use are dangerous in the opinion of the inspector.*

Rule 224. Protection blow-off piping. A bottom blow-off pipe when exposed to direct furnace heat, shall be protected by fire brick or other heat resisting material so arranged that the pipe may be inspected.

An opening in the boiler setting for a blow-off pipe shall be arranged to provide for free expansion and contraction.

Rule 225. Feed piping. The feed pipe of a steam boiler operated at more than 15 lbs. per sq. in. maximum allowable working pressure, shall be provided with a check valve near the boiler and a valve or cock between the check valve and boiler, and when two or more boilers are fed from a common source, there shall also be a stop valve on the branch to each boiler, between the check valve and the source of supply. When a globe valve is used on a feed pipe, the inlet shall be under the disk of the valve.

Rule 226. Water fronts. Each boiler fitted with a water-jacketed boiler furnace mouth protector, or similar appliance having valves on the pipes connecting them to the boiler, shall have these valves locked or sealed open. Such valves, when used, shall be of the straightway type. Suitable means should be provided for blowing out this equipment.

Rule 227. Feed pipe, size and methods of feeding. A boiler having more than 500 sq. ft. of water-heating surface shall have at least two methods of feeding, one of which shall be a pump, inspirator, or injector. Where a source of feed is available at a sufficient pressure to feed the boiler against a pressure 6 per cent higher than that at which the safety valve is set to blow, this may be considered one of the methods. For boilers having a heating surface of not more than 100 sq. ft., the feed pipe shall be not less than ½ in. pipe size; and for boilers having more than 100 sq. ft. of heating surface, the feed pipe shall be not less than ¾ in. pipe size. A return trap shall not be considered as a method of feeding. For boilers other than those fired with spreader-type stokers or with gaseous, liquid, or pulverized fuels, if pumps only are used, one shall be steam driven.

SECTION 3

MINIATURE BOILERS

NEW INSTALLATIONS

Rule 300(A). New installations. All new miniature boilers and their appurtenances installed after February 8, 1963 in this State to carry steam pressures in excess of fifteen (15) pounds per square inch, except boilers exempt under Sec. 78, Ch. 30, R. S. 1954, as amended, shall be constructed, inspected, stamped and installed in accordance with the applicable rules and regulations of the 1962 edition of Section I, Power Boilers, of the Boiler and Pressure Vessel Code of the American Society of Mechanical Engineers including the Preamble and the Appendix thereof and any adopted amendments thereto and to any rules hereinafter provided for new miniature boilers. Such boilers may be stamped with the approved stamping and registration number of the National Board of Boiler and Pressure Vessel Inspectors in lieu of the aforementioned ASME stamping. The assigned registration number of the State of Maine followed by the letters "ME" shall be stamped on all miniature boilers, with numerals and letters of not less than three-eights (⅜) of an inch in height, before such boilers may be operated in this State.

EXISTING INSTALLATIONS

Rule 301. Existing Installations, Mathematical Calculations. The maximum allowable working pressure on cylindrical shells or drums of miniature boilers that were installed in this State before February 8, 1963 shall be determined in accordance with the formula given in Rule 302, or in accordance with the rules of the Board of Boiler Rules in effect at the time of their construction. The maximum allowable working pressure on any pressure part, except cylindrical shells or drums, of such boilers shall be determined in accordance with the rules of the ASME Code prescribed in Rule 300(A), or in accordance with the rules of the Board of Boiler Rules in effect at the time of the construction of such boilers. The aforesaid boilers shall not exceed any of the following limits:

16 inch inside diameter of shell
42 inch length of shell
20 square feet of water heating surface
100 pounds per square inch maximum allowable pressure

Where any of the above limits is exceeded, the rules for power boilers shall apply.

Rule 302. Maximum pressure. The maximum allowable working pressure on the cylindrical shell of a boiler or drum shall be determined by the strength of the weakest course computed from the thickness of the plate, the efficiency of the longitudinal joint, or of the ligaments between the tube holes in shell or drum (whichever is the least), the inside radius of the course, and the maximum allowable unit working stress, using the following formula:

$$P = \frac{.8\ SEt}{R + 0.6t}$$

Where, P=maximum allowable pressure, lbs. per sq. in.

S=maximum allowable unit stress, lbs. per sq. in., taken from Table P-7 of the ASME Power Boiler Code designated in Rule 300(A).

E=efficiency of longitudinal joints or of ligaments between openings:

for riveted joints=calculated riveted efficiency, according to Par. P-181 of the ASME Power Boiler Code designated in Rule 300(A).

for fusion welded joints=efficiency specified in Par. P-66 of the ASME Power Boiler Code designated in Rule 300(A).

for seamless shells=100 per cent (unity)

for ligaments between openings, the efficiency shall be calculated by the rules given in Pars. P-192 and P-193 of the ASME Power Boiler Code designated in Rule 300(A).

t=minimum thickness of shell plates in weakest course, in inches

R=inside radius of the weakest course of the shell or drum, in inches

Rule 303. Construction. The construction of miniature boilers shall conform to the rules for such boilers as adopted by the Board of Boiler Rules of this State and in effect at the time of their construction.

Rule 304. Electric Boilers. The temperature of the heating element, or elements, of electrically heated steam boilers shall be so controlled that such temperature will not exceed 1200° F. All electrical equipment and wiring shall be installed, grounded and protected in accordance with the requirements of the American Standards Association, National Electrical Code applicable at the time of their installation and the provisions of Rule 412 of these rules and regulations applicable at the time of their installation.

Rule 305. Cleanouts. Every miniature boiler shall be fitted with suitable washout plugs of 1 in. iron pipe size, which shall be screwed into openings in the shell near the bottom. In miniature boilers of the closed-system type heated by removable internal electrical heating elements, the openings for these elements when suitable for cleaning purposes, may be substituted for washout openings. All threaded openings in the boiler shall be provided with a riveted or welded reinforcement if necessary to give four full threads therein.

Rule 306. Feeding devices. Every miniature boiler shall be provided with at least one feed pump or other feeding device, except where it is connected to a water main carrying sufficient pressure to feed the boiler or where the steam generator is operated with no extraction of steam (closed system). In the latter case, in lieu of a feeding device a suitable connection or opening shall be provided to fill the generator when cold. Such connection shall not be less than ½ in. pipe size.

In all cases where no mechanical feed is attached to a boiler the safety valve shall be set at not less than 6% below the pressure of the main source of supply feeding the boiler. A return trap shall not be considered as a mechanical feeding device.

Rule 307. Feed and blow-off connections. Each miniature boiler shall be fitted with feedwater and blow-off connections, which shall not be less than ½ in. iron-pipe size unless operated on a closed system as provided in Rule 306. The feed pipe shall be provided with a check valve and a stop valve. The feedwater may be delivered to the boiler through the blow-off connection, if desired. The blow-off shall be fitted with a valve or cock in direct connection with the lowest water space practicable.

Rule 308. Gage glasses. Each miniature boiler for operation with a definite water level shall be equipped with a glass water gage for determining the water level. The lowest permissible water level shall be at a point one-third of the height of the shell, except where the boiler is equipped with internal furnace, when it shall be not less than one-third of the length of the tubes above the top of the furnace. In the case of small generating units operated on the closed system where there is insufficient space for the usual glass water gage, water level indicators of the glass bull's-eye type may be used.

Rule 309. Steam gages. Each miniature boiler shall be equipped with a steam gage having its dial graduated to not less than 1½ times the maximum allowable working pressure. The gage shall be connected

to the steam space or to the steam connection to the water column by a brass or bronze composition siphon tube or equivalent device that will keep the gage tube filled with water.

Rule 310. Safety valves. Each miniature boiler shall be equipped with a sealed spring-loaded pop safety valve, not less than ½ in. in diameter, connected directly to the boiler. Where there is no extraction of steam (closed system) a fracturing disk safety valve may be used in addition to the spring-loaded pop safety valve. The safety valve shall be plainly marked by its manufacturer showing his name or an identifying trademark, the manufacturer's design or type number, the nominal pipe size in inches, the seat diameter, the steam pressure at which it is set to blow, the blowdown or blowback in lbs., the relieving capacity in lbs. of steam per hour, the capacity lift, and the ASME safety valve symbol as shown in Fig. P-39 of the ASME Code. The safety valve provided on each miniature boiler shall have sufficient relieving capacity to discharge all the steam that can be generated by the boiler without allowing the pressure to rise more than 6 per cent above the maximum allowable working pressure of the boiler.

Rule 311. Stop valves. Each steam line from a miniature boiler shall be provided with a stop valve located as close to the boiler shell or drum as is practicable, except when the boiler and steam receiver are operated as a closed system.

Rule 312. Fuel regulators and automatic devices. It is recommended that all miniature boilers operated with gas, oil or mechanical firing devices, or with electric heating elements be provided with automatic low-water fuel cutouts and/or with automatic fuel-regulating governors controlled by the steam pressure. Such a governor when used with gas fuel shall be so constructed that in the event of its failure, there can be no possibility of steam from the boiler entering the gas chamber or the gas supply pipe.

SECTION 4

BOILERS OF ALL TYPES

Rule 400. Inspection. After an inspection certificate has expired or become void, said boiler shall be subject to inspection by the Chief Inspector or his deputies.

Rule 401. Reports. (a) Insurance companies shall furnish the chief inspector with a copy of external inspection reports, or reports of accidents, when any defect is found which affects the safety of the boiler.

(b) If a special inspector, upon the first inspection of a new risk finds that the boiler or any of the appurtenances are in such condition that his company refuses insurance on the same, the company shall immediately notify the Department of Labor and Industry, Division of Boiler Inspections, of that fact together with a list of the defects.

(c) Whenever any boiler is patched or otherwise repaired and the patch or other repair affects the structure of such boiler in any way to require that the maximum allowable working pressure for the boiler shall be reduced, the inspector shall furnish the Department with a new long form data report for said boiler and a sketch of the patch or other repair, together with all data pertinent to same.

(d) Whenever any stationary boiler is reinstalled at a new location, the inspector shall furnish the Department with a new long form data report for such boiler.

Rule 402 (A). **Used Boilers.** Used steam boilers from another state, or country, and boilers exempt under Sec. 78, Chap. 30, R. S. 1954 as amended, that are over 15 years old and have never been installed, registered and operated in this State, shall not be operated under steam pressures exceeding 15 pounds per square inch, except boilers exempt by Sec. 78, Chap. 30, R. S. 1954 as amended. For the purposes of this rule, the age of each such boiler shall be determined from the total elapsed time calculated from the calendar year in which it was built, to and including the calendar year in which the initial inspection certificate is granted to permit its operation in this State.

To be acceptable for operation in this State, such used boilers shall bear the standard stamping of this State, or of the American Society of Mechanical Engineers (ASME), or of the National Board of Boiler and Pressure Vessel Inspectors (Nat'l Board), or the standard stamping of another state that has standards for the construction of boilers equivalent to such standards of the State of Maine.

It is recommended that before being brought into this State for use or installation, that, approval by the Chief Inspector be obtained and that each such boiler be internally and externally inspected by a boiler inspector who is duly authorized to inspect boilers in this State or by an inspector who holds a valid commission as an inspector of steam boilers and pressure vessels issued by the National Board of Boiler and Pressure Vessel Inspectors, and that a full report covering said inspection be filed with the Chief Inspector together with a copy of the Manufacturer's Data Report covering the construction of the boiler in question.

Upon completion of its installation and before being put in operation, each such used boiler shall be thoroughly inspected internally and externally by a duly authorized boiler inspector who shall also witness a hydrostatic test of 1½ times the maximum allowable working pressure that the boiler may, according to the rules and regulations adopted by the Board, be allowed to carry. Each such boiler shall be equipped with appliances and appurtenances conforming to the rules adopted by the Board of Boiler Rules applying to new installations of such boilers.

*(B) **No boiler or boilers** of longitudinal lap seam construction not installed and operating in the State prior to January 1st, 1951 shall be installed and operated within the State at over 15 pounds pressure. (The application of this rule shall not apply to Miniature Boilers.)

Rule 403. Inspection preparation. All boilers used for generating steam which carry a pressure of more than fifteen pounds psi and subject to regular inspections as provided in Chap. 30, Sections 72, 74, 75, and 76, R. S. 1954 shall be prepared for such inspections when the owners or users are notified by either the Department of Labor and Industry, Division of Boiler Inspections, or any authorized insurance company for such inspections or hydrostatic test.

Rule 404. Notice of inspections. The owner or user of the boiler or boilers herein required to be inspected annually on a date specified by the Chief Inspector, Deputy Inspector, or Authorized Inspectors of any authorized insurance company, which date shall be not less than seven days after date of such notice, unless by consent of the owner, shall prepare the boiler for internal inspection, or hydrostatic pressure test when necessary.

Rule 405. Steel boilers, how prepared. To prepare a boiler for internal inspection, the water shall be drawn off and the boiler thoroughly washed. All manhole and handhole plates and washout plugs in boilers and plugs in water column connection, if any, shall be removed, and the

* Adopted March 21, 1955.

furnace and combustion chambers thoroughly cooled and cleaned. All grates of internally fired boilers shall be removed. Also enough of the brick work or insulating material of any type of boiler shall be removed to determine the condition of the boiler, furnace, mud drum heads, or other parts at each annual inspection when required. The steam gage should be removed for testing.

Rule 406. If not properly prepared. If a boiler has not been properly prepared for internal inspection as provided for in this rule, the inspector may decline to make such inspection and certificate shall be withheld until the boiler has been properly prepared and inspected.

If it is found that steam or hot water is leaking into the boiler, the source of such leakage shall be disconnected, if necessary, so as to cut out such steam or hot water from the boiler to be inspected.

Rule 407. Payment of fees. The fees for inspections as provided for in Sec. 72, Chap. 30, R. S. 1954 shall be paid to the chief, or deputy inspector, and a receipt stating the amounts collected by said inspector shall be given to the owner, or user, of such boiler or boilers. If the owner, or user, of any boiler required to be inspected under this Act by the Department of Labor and Industry, Division of Boiler Inspections, refuses to allow a boiler to be inspected or refuses to pay the fee as provided for in Sec. 72, Chap. 30, R. S. 1954, then such boiler or boilers shall not be operated until after a valid inspection has been made by either the chief inspector, any deputy inspector, or by an authorized inspector as provided in the before mentioned act.

Rule 408. Boilers found to be unsafe. If, upon inspection, a boiler or boilers are found to be in such condition that they are unsafe to operate, they shall be condemned. However, if he so desires, the owner or user may immediately appeal to the Chief Inspector or Board of Boiler Rules, before the boiler is stamped as provided in Sec. 82, Chap. 30, R. S. 1954, and the owner or user of such boiler who causes the same to be operated with the condemnation mark thereon, shall be subject to the penalty as provided in Sec. 83, Chap. 30, R. S. 1954, as amended. If appeal is made, the boiler shall not be operated while the decision is pending.

Rule 409. Lap Seam cracks. The shell or drum of a boiler in which a typical "lap seam crack" is discovered along a longitudinal riveted joint for either butt seam or lap joint shall be permanently discontinued for use under steam pressure. By "lap seam crack" is meant the typical

crack frequently found in lap seams extending parallel to the longitudinal joint and located either between or adjacent to rivet holes.

Rule 410. Condemnation—identification marks. When the boiler is stamped with the condemnation mark, the inspector shall put underneath such mark the identification mark furnished his company, if an insurance company, or that provided for the Chief Inspector or his deputies if condemned by the State, it being understood that identification marks shall be provided to all companies insuring boilers within the State by the Department of Labor and Industry, Division of Boiler Inspections.

Rule 411. Removable insulation on joints. When insulating a boiler, provision shall be made so that the insulation covering the longitudinal seam may be removed, or a space not less than ten inches wide shall be provided with removable insulation for taking measurements or inspection of the joint and shell. This also applies to portable boilers which are jacketed with steel over the insulation.

If the boiler is jacketed so that the longitudinal seams of shells, drums or domes cannot be seen, and if it cannot otherwise be determined, enough of the jacketing, setting wall or other covering shall be removed so that the size and pitch of the rivets and such other data as may be necessary can be determined when, in the opinion of the inspector, it is necessary to determine the safety of the boiler or appliance.

Rule 412. Switches—grounds. All appliances required for electric steam generators shall be attached in accordance with the following rules:

A cable at least as large as one of the incoming power lines to the generator shall be provided for grounding the generator shell. This cable shall be permanently fastened on some part of the generator and shall be grounded in an approved manner.

A suitable screen or guard shall be provided around high tension bushings and a sign posted warning of high voltage. This screen or guard shall be so located that it will be impossible for anyone working around the generator to accidentally come in contact with the high tension circuits. When adjusting safety valves, the power circuit to the generator shall be open. The generator may be under steam pressure but the power line shall be open while the operator is making the necessary adjustments. A switch or circuit breaker of suitable rupturing capacity shall be installed in the power circuit together with discon-

necting switches so that the power circuit may be opened and prevented from being accidentally closed during repairs to the boiler. One switch to be located near the boiler.

Rule 413. Maximum setting of safety valve. In all cases where no mechanical feed is attached to a boiler the safety valve shall be set at not less than 6% below the pressure of the main source of supply feeding the boiler. A return trap shall not be considered as a mechanical feeding device. A boiler having more than 500 sq. ft. of water heating surface shall have at least two means of feeding, one of which shall be a pump, inspirator or injector. Where a source of feed is available at a sufficient pressure to feed the boiler against a pressure 6% higher than that at which the safety valve is set to blow, this may be considered one of the means. Where possible feed water should have a temperature of not less than 120 degrees Fahrenheit.

Rule 414. Gas regulators. Where boilers are gas fired, the gas burner, or burners, in each such case, should be equipped with a fuel-regulating governor, which shall be automatic and regulated by the steam pressure. Such a governor shall be so constructed that in the event of its failure, there can be no possibility of steam from the boiler entering the gas chamber or gas supply pipe.

Rule 415. Insulation—removed. If upon an external inspection there is evidence of a leak or crack, enough of the covering of the boiler shall be removed as the inspector shall deem necessary to determine the safety of the boiler, or if the covering cannot be removed at that time, he may order the operation of the boiler suspended until such time as the covering can be removed and proper examination made.

Rule 416. Leaks at riveted joints. Leakage at riveted joints or connections must be carefully investigated to determine the cause of such leakage and suitable repairs shall be ordered.

Rule 418. Accumulative tests. The Chief Inspector or Deputy Inspector or Inspectors may at any time call for an accumulative test to determine if a steam heating boiler is subject to, or operated at, a pressure in excess of 15 lbs.

Rule 419. Reinstalled boilers. All power boilers and all miniature boilers which are relocated and reinstalled with their ownership unchanged, after they are reinstalled, shall be inspected internally and externally and be subjected to a hydrostatic test of 1½ times their maxi-

mum allowable working pressure before being placed in service and shall be equipped with appurtenances conforming to the ASME Boiler Code applying to new installations of such boilers.

Rule 420. Second hand boilers. Second hand power boilers and second hand miniature boilers, by which is meant boilers where both their location and ownership are changed, shall, after their reinstallation, be inspected internally and externally and be subjected to a hydrostatic test of 1½ times their maximum allowable working pressure before being placed in operation, and shall be equipped with appurtenances conforming to the ASME Boiler Code applying to new installations of such boilers.

Rule 421. Factors of safety for reinstallation. All relocated and reinstalled power boilers, with or without change of ownership, which are not constructed and stamped in accordance with the ASME Power Boiler Code and which were in use in this State prior to January 9, 1936, on reinstallation, shall have a factor of safety of not less than 5.5 when the longitudinal joints of such boilers are of butt and double strap construction. Power Boilers of longitudinal lap seam construction which were in use in this State before January 9, 1936, when relocated and reinstalled with or without change of ownership, shall have a factor of safety of not less than that required by the provisions of Rule 202 of these rules and regulations pertaining to boilers of longitudinal lap seam construction, except that the maximum allowable working pressure for any fire tube boiler of longitudinal lap seam construction shall not exceed 50 pounds per square inch after such boiler is 30 years old.

All power boilers which were in use in this State before January 9, 1936 which are constructed and stamped in accordance with the ASME Power Boiler Code, when relocated and reinstalled with or without change of ownership, shall have a Factor of Safety of not less than 5 when their longitudinal joints are of butt and double strap construction or of butt double welded construction.

Power boilers which were installed in this State after January 9, 1936 in accordance with the rules and regulations adopted by the Board of Boiler Rules, when relocated and reinstalled with or without change of ownership, shall have a Factor of Safety not less than the Factor of Safety provided in their original construction when their longitudinal joints are of butt and double strap construction or of butt double welded construction.

Power boilers of longitudinal lap seam construction which were installed in this State after January 9, 1936 in accordance with the rules

and regulations adopted by the Board of Boiler Rules, when relocated and reinstalled with or without change of ownership shall have a Factor of Safety of not less than 5.5.

Rule 422. Hydrostatic test. Whenever a boiler is subjected to hydrostatic test required by these rules and regulations, the required test pressure shall be 1½ times the maximum allowable working pressure for the installation so tested. The test pressure shall be under proper control so that in no case shall the required test pressure be exceeded by more than 6 per cent. The temperature of the water used for such test should not be less than the surrounding atmosphere and in no case shall it be less than 70 degrees Fahrenheit nor more than 150 degrees Fahrenheit. During a hydrostatic test, the safety valve, or valves, shall be removed or each safety valve shall be held closed or seated by means of a test clamp and not by increasing the compression upon the spring of the safety valve.

The Chief Inspector of Boilers is granted the authority to waive the required hydrostatic test in certain instances when in his judgment such test is not necessary.

Rule 423. Classification of boilers. The Chief Inspector of Boilers is authorized to define and fix the classification and/or type of any boiler in respect to these rules and regulations and in accordance with the ASME Boiler Code and/or established practices of related industry.

Rule 424. Fusible plugs. Fire-Actuated fusible plugs, if used, shall conform to the rules of the ASME Boiler Code and shall be renewed when, in the opinion of the Inspector, such renewal is necessary.

Rule 425. Repairs. All boilers, including their appliances, fittings and appurtenances, shall be maintained in a safe and adequate condition in accordance with the rules and regulations adopted by the Board of Boiler Rules of this State. When repairs are necessary to correct defects which in any way affect the working pressure or safety of a boiler, an authorized boiler inspector shall be called for consultation and advice concerning the proper method of effecting the proper repairs; after their completion, such repairs shall be approved by an authorized boiler inspector, who shall report his findings to the Department. The ends of all tubes in fire boilers shall be firmly rolled and beaded; or rolled, beaded and welded around the edge of the bead. Repairs to all boilers and any repair or replacement of their fittings and appurtenances shall conform to the requirements of the ASME Boiler Code.

SECTION 5

QUALIFICATION METAL-ARC WELDERS

The following rules for qualifying a welder are excerpts from the ASME Boiler and Pressure Vessel Code, 1962 Edition, Section IX, Welding Qualifications. They are designed to qualify a welder to weld on boilers having plate thicknesses not over ¾". Any welder to do welding on boilers of greater plate thickness must pass the test as set up in Section IX, Welding Qualifications, of the ASME Boiler and Pressure Vessel Code, 1962 Edition. Only the requirements particularly applicable to welding ¾" or less plate thickness are reprinted here for the usefulness and reference of welders wishing to qualify in the State of Maine. Any situation not covered in these excerpts must be governed by Section IX, Welding Qualifications, of the ASME Boiler and Pressure Vessel Code, 1962 Edition.

Rule 451

(a) The qualification tests shall consist of the welding together of two short lengths of 5 inch IPS pipe of not less than ⅜ inch wall thickness. The ends of the pipe shall be beveled at the welding groove to an angle of not over 37½ degrees. The two vertical welds and the one overhead weld must be made with the pipe in a fixed horizontal position; the pipe shall then be set up with the welding groove in a horizontal position for the remaining weld. No back-up strip is to be used in these tests.

(b) A test specimen shall be removed from the top, the bottom and each of the two sides. These specimens shall be removed at approximately 90° apart. Such specimens shall be approximately 1½" in width and be machined or ground to ⅜" in thickness.

(c) Test specimens shall be distinctly marked to identify the position of the test specimen being removed from the pipe.

(d) These specimens shall then be bent into the form of a U in a jig. The male member of the jig to be 1½" and the female member 2⅜". The specimens shall be placed mid span and the two members of the jig forced together until the curvature of the specimen is such that a 1/32" diameter wire cannot be passed between the curve portion of the male member and the specimen.

(e) Any welds in test specimens which exhibit any zones of inadequate joint penetration or undercutting, or any welds which, when guided-bend tested, show any crack or other open defect exceeding 1/8"

measured in any direction on the convex side after bending, shall be the cause for the rejection of that specimen and failure to pass the test, except that cracks occurring on the corner of the specimens shall not be considered, unless there is definite evidence that they result from slag inclusions or other internal defects.

(f) A welder who fails to meet the requirements for one or more of the test specimens as prescribed may be immediately retested by making two test welds for the position or positions in which he failed both of which shall pass the test requirements.

(g) Anyone qualifying in horizontal, vertical or over-head positions shall not be required to make a test specimen in the flat position but shall be qualified without such procedure.

(h) All test specimens may be made under the observation of a witness, preferably the employer of the applicant. The application for certification shall be signed by the witness under oath who certifies that the welds were made under his observation by the welder who is making application for the certificate.

(i) Before the qualification certificate shall be granted, the specimens shall be examined by the chief boiler inspector, except in case of emergency he may delegate to an authorized National Board Inspector the authority to qualify the welder after examination of the specimens ordered made by him.

(j) Requalification of the performance test shall be made when a welder has not been engaged in making welds, in the positions and type of welding for which he had qualified, for a period of 3 or more months or when there is specific reason to question his ability to make welds that meet the specifications.

CERTIFICATES

Rule 452

(a) A welder who has passed the test as prescribed shall be issued a certificate which will permit him to make welded repairs on steam boilers. This certificate shall remain in force for one year from its date unless revoked for incompetence, untrustworthiness, wilful falsification of any statement or for making any welded repairs without the permission of an authorized inspector.

(b) The certificate shall specify the positions in which the welder has been tested, material used, filler metal used, date of examination and will be assigned a number which will be used as his identifying mark on all welded repairs.

(c) A welder may use only the positions and procedures for which he has been tested and certified. Welding repairs requiring a position or procedure other than for which he is certified will necessitate requalification.

(d) Any welder who has been qualified by his employer under the provisions of Section IX, Welding Qualifications, of the ASME Boiler and Pressure Vessel Code, for all positions known as, Horizontal, Vertical and Overhead, and who has been employed during the last 3 months in making welds of the type and positions for which he qualified, need not submit test specimens when making application for a certificate under these rules, provided that, his application is accompanied by a sworn statement from his employer certifying that the tests were originally made and approved and that he has been employed as set forth above, and with a certified copy or photostat copy of the full record of said welder's qualification test performed for said employer.

(e) The fee for each welder's certificate shall be $5.

(f) An authorized inspector has the right at any time to call for and witness the making of test plates as described and to observe the physical tests of them.

SECTION 6

DOWTHERM BOILERS

Rule 500. All Dowtherm boilers installed in this State after May 8, 1963, except boilers exempt under Section 78, Chapter 30, R. S. 1954, amended 1957, shall be constructed in accordance with the requirements of the 1962 edition of the ASME Power Boiler Code for boilers of working pressure of at least 50 lbs. above that at which the Dowtherm boiler is to be used.

Such boilers shall be inspected and stamped as provided in P-332 of the ASME Power Boiler Code or with the National Board symbol and registration number, together with the serial number of the State of Maine, followed by the letters "ME," said letters and figures to be not less than ⅜" in height.

Manufacturers of said boilers must file a copy of the Manufacturers' Data Report with the Department on ASME forms.

Rule 501. Fittings. All valves and fittings shall be of either cast or forged steel and shall comply with the ASME Boiler Code, and shall be marked with the name, trade mark or other identifying marks for a pressure not less than 150 lbs. psi and temperature maximum 750°F. Brass, bronze, or copper fittings or valves are *absolutely prohibited.*

Rule 502. Piping. All pipes shall be of steel or material permitted by the ASME Power Boiler Code suitable for a pressure of 150 lbs. psi and for a maximum temperature of 750°F. All joints where possible shall be welded. Such welding shall be done by a qualified welder.

Each Dowtherm Boiler shall be provided with a return pipe loop connection as illustrated in Fig. H.-3 and Par. H.-40 of the ASME Low Pressure Heating Boiler Code.

Rule 503. Pressure Gages, inspectors test gage connection and blow-off connections. Pressure gages, inspectors test gage connection and blow-off connections shall comply with the requirements of the ASME Power Boiler Code except that only one blow-off valve is required. It is recommended that a globe valve be used on the blow-off.

Rule 504. Gage glass. A liquid level indicating device is required and should preferably be a water column of steel construction of the flat glass, mica protected, see-through type. Try cocks or other similar liquid level determining devices shall not be used.

Rule 505. Safety valves. The safety valve capacity shall be in accordance with the ASME Power Boiler Code.

Safety valves shall be set to relieve at a pressure not in excess of the designed pressure of the boiler, which shall be at least 50 pounds above the normal operating pressure. The safety valve shall be of the totally enclosed type without a try lever.

The outlet from the safety valve shall be piped to a safe point of discharge, outside the building, where there is no danger of fire. The safety valve escape pipe shall be at least as large as the safety valve outlet. If a condenser is used the total area of the opening through the condenser shall be at least twice the area of the safety valve outlet. The outlet from the condenser shall be open to the atmosphere.

The safety valve shall be removed from the boiler for checking, inspection and repair at least once in every six months of service.

Rule 506. Automatic controls. The boiler shall be provided with a low liquid level fuel cut-out designed to stop the firing mechanism before the Dowtherm reaches a dangerously low level.

The boiler shall be equipped with suitable pressure and temperature controls for the firing mechanism.

Where steam is available, each boiler, furnace or fire box and each boiler room shall be equipped with steam smothering lines, with control valves outside the boiler room for use in case of fire.

Rule 507. Drains. The gage blow-down, the low level cut-out drain and all other drains shall be connected to some tank in the system or piped to a safe point of discharge outside the building where there is no danger of fire.

RULES GOVERNING LOW PRESSURE HEATING BOILERS

Definitions

A "Hot Water Supply Boiler" is a closed vessel in which water is heated for domestic supply purposes. Excluded shall be apparatus such as ordinary range water backs, range boilers or automatic service water heaters which are used for the production of service hot water supply and which are provided with adequate safety valves. Also, excluded shall be automatically fired coil or tubular type water heaters without integral water storage capacity used for the same service provided they are automatically fired and are equipped with adequate safety valves as provided in Section 9. When any of the above mentioned objects are hand fired they shall be made to comply with rules for hot water supply boilers.

A "Hot Water Heating Boiler" is a boiler in which no steam is generated and in which hot water is circulated for heating purposes.

A "Service Water Heater" is a range boiler or tank which is heated with a self-contained gas or oil burner or electricity.

SECTION 7

Rules Governing Low Pressure Steam Heating Boilers

NEW INSTALLATIONS

All steam heating boilers in schoolhouses and all steam heating boilers owned by municipalities installed after May 8, 1963 for operation at pressures of 15 pounds or less shall be constructed and installed in accordance with the rules of the ASME Low-Pressure Boiler Code, 1962 edition, and any adopted amendments thereto, and in conformance with the requirements of Addendum A, B and C hereof.

Addendum A. Each boiler shall have a blow-off pipe connection fitted with a valve, or cock, not less than ¾" pipe size connected with the lowest water space practicable and which shall be piped to a safe point of discharge.

Cocks, when used, shall have the plug held in place by a guard, or gland. The end of the plug shall be distinctly marked in line with the passage.

Straight-run globe valves of the ordinary type, sill cocks, water faucets or valves of any type in which dams, or pockets, exist for the collection of sediment shall not be used on such connections.

Addendum B. Water-Column Pipes. The minimum size of ferrous or nonferrous pipes connecting a water column to a steam boiler shall be 1 in. The steam connection to the water column of a horizontal-return tubular boiler shall be taken from the top of the shell or the upper part of the head; the water connection shall be taken from a point not less than 6 in. below the center line of the shell. No connections, except for regulator, or drain, or steam gage, shall be attached to the water column, or the piping connecting a water column to a boiler (see Par. H-38 for introduction of feedwater into boiler). If the water column or gage glass is connected to the boiler by pipe and fittings, a cross tee, or equivalent, in which a drain valve of at least ½" pipe size, shall be placed

in the water piping connection at every right-angle turn to facilitate cleaning. Water-glass fitting and/or gage cocks may be attached direct to a boiler.

Addendum C. Where boilers are equipped with automatic feeding devices, the feed pipes shall be provided with a check valve and a valve, or cock, between the check valve and the boiler.

EXISTING INSTALLATIONS

Rule 1. Whenever repairs or replacements of fittings, or appurtenances, are to be made, they shall conform to the ASME Code.

Rule 2. All installations, including appliances fittings and appurtenances shall be maintained in reasonable good working order.

Rule 3. Cast Iron Steam Boilers, How Prepared. A Cast Iron Steam Boiler shall be prepared for inspection by cleaning all normally accessible surfaces.

Rule 4. Steam Gages. Each steam boiler shall have a steam gage connected to its steam space, water column, or steam connection by means of a siphon, or equivalent device, exterior to the boiler and of sufficient capacity to keep the gage tube filled with water, except gages with built-in siphons, and be so arranged that the gage cannot be shut off from the boiler except by a cock with tee or lever handle, placed in the pipe near the gage. The handle of the cock shall be parallel to the pipe in which it is located when the cock is open.

The scale on the dial of a steam boiler gage shall be graduated to not less than 30 lbs. The gage shall be provided with effective stops for the indicating pointer at the zero point. The travel of the pointer from zero to 30 lbs. pressure shall be at least 3″.

Whenever connections of steam gages require replacement, such replacements when smaller than 1″ pipe size and longer than 5′ between the siphon and point of connection of pipe to boiler, shall be of nonferrous metal; and, also, when smaller than ½″ pipe size and shorter than 5′ between the siphon and point of connection, of pipe to boiler.

On compound gages, effective stops shall be set at the limits of the gage readings on both the pressure and vacuum sides.

Rule 5. Water Gage-Glasses. Each steam boiler shall have one, or more, water-gage glasses attached to the water column, or boiler, by

means of valved fittings, with the lower fitting provided with a valve, or pet cock, to facilitate cleaning. Gage glass replacements shall be possible under pressure.

(Transparent material other than glass may be used for the water gage provided that the material has proved suitable for the pressure, temperature, and corrosive conditions met with in service.)

On jacketed type boilers, the water gage glass shall be visible without removing the jacket.

Rule 6. Each boiler shall have a blow-off pipe connection fitted with a valve, or cock, not less than ¾" pipe size connected with the lowest water space practicable.

Cocks, when used, shall have the plug held in place by a guard, or gland. The end of the plug shall be distinctly marked in line with the passage.

Straight-run globe valves of the ordinary type, sill cocks, water faucets or valves of any type in which dams, or pockets, exist for the collection of sediment shall not be used on such connections.

Rule 7. Each water column shall be fitted with a valve drain of at least ½" pipe size.

Rule 8. Adequate safety valves shall be provided. Additional or replacement safety valves shall be ASME officially approved and rated safety valves set at or below 15 pounds psig. Safety valves of similar types to the ASME officially approved rated safety valves installed prior to the adoption of these rules but whose identification is lost, shall be allowed provided an accumulation test proves that they are adequate to relieve all the steam that can be generated by the boiler without allowing the steam pressure to exceed 15 pounds psig.

Safety valves shall be installed as closely as practicable to the top of the boiler without any intervening shutoff valve or valves between the boiler and safety valves. The total relieving capacity required of the safety valve, or valves, in pounds of steam per hour shall be at least equal to the gross output of the boiler in BTU per hour divided by 1,000, based on the manufacturer's rated gross output or the maximum possible fuel consumption coincident with the boiler, whichever is greater. If radiation is used, the gross output of the boiler shall, with due consideration being given for piping loss and pick-up, be determined by using not less than 240 BTU per square foot of radiation.

The maximum allowable working pressure for any low-pressure steam heating boiler shall be 15 pounds psig.

Rule 9. Bottom blow-off valves, safety, and relief valves shall be piped to a safe point of discharge.

Rule 10. Automatic low water fuel cutoff and/or water feeding device. Each automatically fired steam, or vapor-system, boiler shall be equipped with an automatic low-water fuel cut-off so located as to automatically cut off the fuel supply when the surface of the water falls to the lowest safe water line. If a water feeding device is installed, it shall be so constructed that the water inlet valve cannot feed water into the boiler through the float chamber and so located as to supply requisite feedwater.

Where boilers are equipped with automatic feeding devices, the feed pipe shall be provided with a check valve and a valve, or cock, between the check valve and the boiler.

The operating level of this device shall not be lower than the lowest level permitted by the ASME Code.

Rule 11. All automatically fired boilers shall have the manual damper removed.

SECTION 8

Rules Governing Hot Water Heating Boilers

NEW INSTALLATIONS

All hot water heating boilers in schoolhouses and all hot water heating boilers owned by municipalities installed after May 8, 1963 shall be constructed and installed in accordance with the rules of the ASME Low-Pressure Heating Boiler Code, 1962 edition, and any adopted amendments thereto, with the following exceptions: Delete Paragraphs H-60 and H-113 of the aforesaid ASME Code and substitute in place thereof, the following:

Addendum A. Each boiler shall have a blow-off pipe connection, fitted with a valve or cock, not less than ¾" pipe size connected with the lowest water space practicable and which shall be piped to a safe point of discharge. Cocks, when used, shall have the plug held in place by a guard, or gland. The end of the plug shall be distinctly marked in line with the passage. Straight run globe valves of the ordinary type, sill cocks, water faucets or valves of any type in which dams or pockets exist for the collection of sediment shall not be used on such connections.

EXISTING INSTALLATIONS

Rule 1. Whenever repairs or replacements of fittings, or appurtenances, are to be made, they shall conform to the ASME Code.

Rule 2. All installations, including appliances, fittings and appurtenances shall be maintained in reasonable good working order.

Rule 3. Hot Water Heating Boilers, How Prepared. Hot Water Heating Boilers shall be prepared for inspection by cleaning all normally accessible surfaces.

Rule 4. Pressure or Altitude Gages. Each hot water heating boiler shall have a pressure or altitude gage, connected to it, or to its flow connection in such a manner that it cannot be shut off from the boiler except by a cock with tee or lever handle, placed on the pipe near the gage. The handle of the cock shall be parallel to the pipe in which it is located when the cock is open.

The scale on the dial of the pressure or altitude gage shall be graduated to not less than 1½ times the maximum allowable working pressure. The gage shall be provided with effective stops for the indicating pointer at the zero point.

Whenever pressure or altitude gage connections require replacements, such replacements shall be of nonferrous composition when smaller than 1″ pipe size and longer than 5′ between the gage and point of connection of pipe to boiler, and also when smaller than ½″ pipe size and shorter than 5′ between the gage and point of connection of pipe to boiler.

Rule 5. Thermometer. Each hot water heating boiler shall have a thermometer so located and connected that it shall be easily readable when observing the water pressure or altitude. The thermometer shall be so located that it shall at all times indicate the temperature in degrees Fahrenheit of the water in the boiler at, or near, the outlet.

Rule 6. Each hot water heating boiler shall have one or more ASME officially approved and rated relief valves. Such valve, or valves shall be set to relieve at or below the designed maximum allowable working pressure of the boiler. Additional or replacement relief valves, when required, shall be ASME officially approved and rated relief valves.

Relief valves shall be attached as closely as practicable to the top of the boiler without any intervening shutoff valve, or valves, between such valves and the boiler.

The total relief valve relieving capacity in BTU per hour shall be at least equal to the gross output of the boiler in BTU per hour, based on the manufacturer's rated gross output or the maximum possible fuel consumption coincident with the boiler, whichever is greater. If radiation is used, the gross output of the boiler shall be determined by using not less than 150 BTU per square foot of radiation with due consideration being given for piping loss and pickup.

Rule 7. Bottom blow-off valves, safety, and relief valves shall be piped to a safe point of discharge.

Rule 8. All automatically fired boilers shall have the manual damper removed.

SECTION 9

Rules Governing Hot Water Supply Boilers

NEW INSTALLATIONS

All hot water supply boilers in schoolhouses and all hot water supply boilers owned by municipalities installed after May 8, 1963 shall be constructed and installed in accordance with the rules of the ASME Low-Pressure Heating Boiler Code, 1962 edition, and any adopted amendments thereto, with the following exceptions: Delete Paragraphs H-60 and H-113 of the aforesaid ASME Code and substitute in place thereof, the following:

Addendum A. Each boiler shall have a blow-off pipe connection, fitted with a valve or cock, not less than ¾" pipe size connected with the lowest water space practicable and which shall be piped to a safe point of discharge. Cocks, when used, shall have the plug held in place by a guard, or gland. The end of the plug shall be distinctly marked in line with the passage. Straight run globe valves of the ordinary type, sill cocks, water faucets or valves of any type in which dams or pockets exist for the collection of sediment shall not be used on such connections.

EXISTING INSTALLATIONS

Rule 1. Whenever repairs or replacements of fittings, or appurtenances, are to be made, they shall conform to the ASME Code.

Rule 2. All installations, including appliances, fittings and appurtenances shall be maintained in reasonable good working order.

Rule 3. Hot Water Heating Boilers, How Prepared. Hot Water Supply Boilers shall be prepared for inspection by cleaning all normally accessible surfaces.

Rule 4. Thermometers. Each Hot Water Supply Boiler shall have a thermometer on the boiler or connected to its tank or to the line leading to the tank and so located and connected that it shall be easily readable.

Rule 5. Relief Valves. The relief valve or valves on hot water supply boilers must be set not in excess of the designed pressure of the boiler. The total relieving capacity of the valve or valves shall be at least equal to the maximum BTU output of the object.

Rule 6. When a hot water supply boiler or any other object excluded under Definition (1) is solid fuel fired it shall be inspected as provided in Section 72, Chapter 30, R. S. 1954, and all appliances and appurtenances must comply with the rules of the Board for Hot Water Supply Boilers.

Rule 7. Bottom blow-off valves, safety, and relief valves shall be piped to a safe point of discharge.

Rule 8. All automatically fired boilers shall have the manual damper removed.

Any conditions not covered by these rules shall be governed as nearly as practicable by the rules of the ASME Code for Low Pressure Heating Boilers, for the pressure and temperature used.

SECTION 10

*Rules Governing Low Pressure Steam Heating Boilers Not Covered by the Rules of Section 7

PREAMBLE

Sec. 78, Ch. 30, R. S. 1954, amended by Sec. 6, Ch. 272, P.L. 1957 provides that certain boilers shall be exempt from the provisions of the Boiler Law as follows:

"The provisions of sections 64 to 84, inclusive, shall not apply to boilers which are under Federal control; or those under the control of the Public Utilities Commission; or to boilers used solely for propelling motor road vehicles; or to boilers of steam fire engines brought into the State for temporary use in times of emergency to check conflagrations; or to boilers used for agricultural purposes only; or to steam heating boilers, except boilers located in schoolhouses or boilers owned by municipalities, which carry pressures not exceeding 15 pounds per square inch, constructed and installed in accordance with the rules adopted by the Board of Boiler Rules; or to miniature boilers exempt by the provisions of section 76."

The rules of this section shall apply to steam heating boilers which carry pressures not exceeding 15 pounds per square inch, in order that such boilers shall be exempt from the provisions of the Boiler Law as stated above, except that the rules of this section do not apply to boilers which are subject to the rules of Section 7, of the State of Maine Boiler Rules and Regulations.

Rule 1000. New Installations. All steam heating boilers, except those located in schoolhouses and municipally owned boilers, which carry pressures not exceeding 15 pounds per square inch shall be constructed and installed in accordance with the standards of the ASME Boiler and Pressure Vessel Code, Section IV, Low-Pressure Heating Boilers, 1962 edition.

Rule 1001. Steam Heating Boilers—Existing Installations. The maximum allowable working pressure for any boiler built or used exclusively for low-pressure steam heating purposes shall not exceed 15 pounds per square inch; each such boiler shall have one or more safety

*Adopted November 21, 1958.

valves none of which shall be set at over 15 pounds per square inch; also, the relieving capacity or the combined relieving capacities of such valve or valves shall be such that they will discharge all of the steam that can be generated by the boiler without allowing the pressure on the boiler to rise above the maximum allowable working pressure. ASME officially approved and rated safety valves shall be used when new safety valves are installed on the herein described boilers or when existing safety valves on such boilers are replaced.

Any hot water tank or other vessel of a similar nature that is not made to be used as a steam heating boiler but is found to be used as such, shall be equipped with an ASME officially approved and rated safety valve or valves set and sealed at not over 15 pounds pressure and capable of discharging all the steam that can be generated by the installation without allowing the pressure therein to exceed 15 pounds per square inch.

The maximum steam pressure on any boiler in which steam is generated, if constructed of cast iron, shall be 15 pounds per square inch.

The preceding rules and regulations are a consolidation of the rules originally adopted on July 9, 1935 together with the amendments adopted thereafter, being a compilation as of July 1, 1964.

BOARD OF BOILER RULES

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RALPH L. LANGILLE
Chief Inspector of Boilers

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